March 1959

MANAGEMENT *and* BUSINESS AUTOMATION

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Page 14

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MANAGEMENT *and* BUSINESS AUTOMATION

March, 1959
Vol. 1, No. 3

Reporting to management on new ideas, developments, applications, results, and the human impact of office automation in all areas of commerce, industry and government.

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Magnetic ink character recognition opens the door to automatic, high-speed check handling.

21 Picking the Computer's Boss— A Decision of Import By D. Ronald Daniel

The organizational location of the computer staff — and the right man to head the program are both problems with great implications.

28 Punched Cards Save a Small Texas Business By Eugene Whitmore

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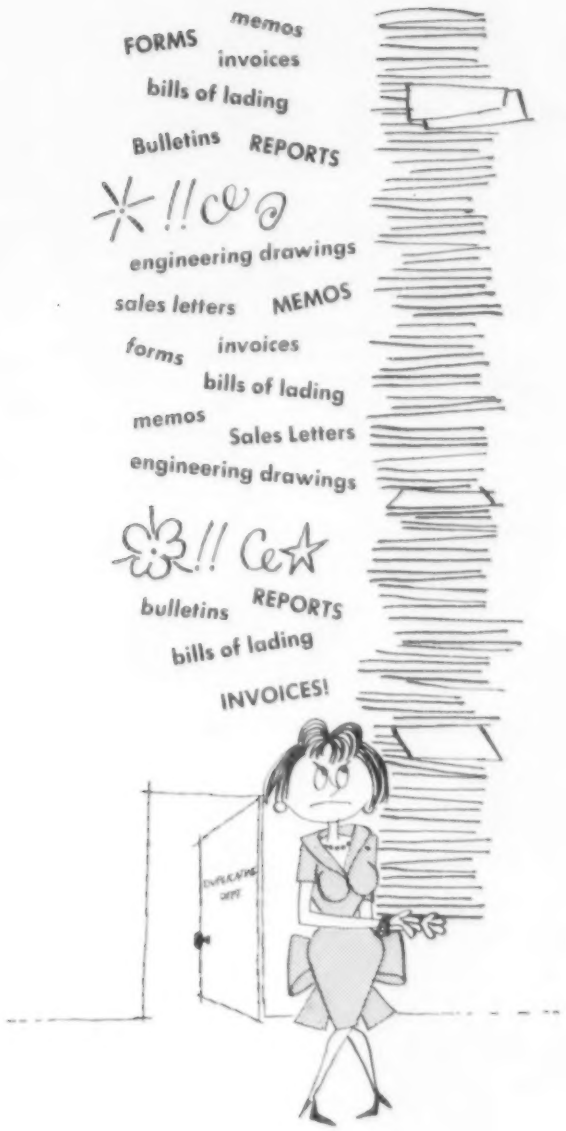

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Letters

Dear Sir:

. . . You should try in every way you can to tell the simple truth that automation cannot succeed unless management does its part in operating businesses in the simple, direct way that suits the peculiar limitations of machines. To do otherwise is expensive.

The most interesting subjects are case examples. Preferable are those that illustrate principles of the advantages of automation, such as better control, speed and better information. The fallacy that cost savings are the one and only objective should be exposed.

The additional and better information that automation provides usually will cost more money, but this information is the very basis for the eventual saving. Certainly this is true in inventory and production control.

The other aspect of automation is people and their important relationship to the more automatic machines. From the title you have chosen, I am sure you have both in mind.

Don T. Barber
Management Consultant
Toronto, Canada

Dear Sir:

Frankly, I was more impressed with Vol. 1, No. 1, than your Preview Edition. This evidently means that each succeeding issue is going to get better.

I would like to throw out a suggestion to challenge your editors: Don't forget the hospitals; they are big "business", and automation is certainly the answer to some of their problems.

A. W. Saphiloff
Administrative Services Director
Department of Mental Hygiene and Hospitals
Petersburg, Va.

Dear Sir:

The story "Westinghouse Automates Engineering Drawings" has come to our attention and we are very much interested in receiving reprints of this article.

We have a department engaged in the business of supplying 35 mm. microfilm prints, in reel form or mounted in IBM aperture cards . . . as explained in your excellent article.

C. W. Castle
Zenith Engineering Co.
Newark, N.J.

Dear Sir:

We found your first issue very interesting and we are looking forward to the subsequent issues.

Byron J. Koch
Manager, Tab Department
The National Shrine of St. Jude
Chicago, Ill.

Address letters to the Editor, MANAGEMENT and BUSINESS AUTOMATION, 600 W. Jackson, Chicago 6, Ill.

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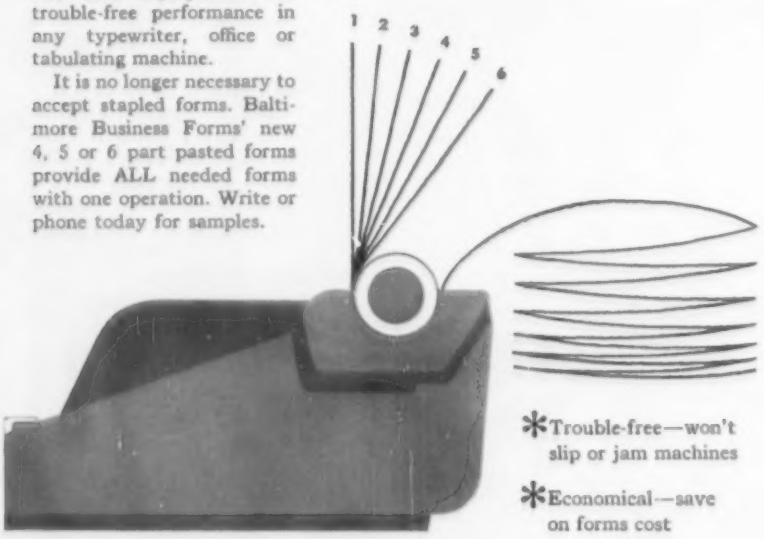

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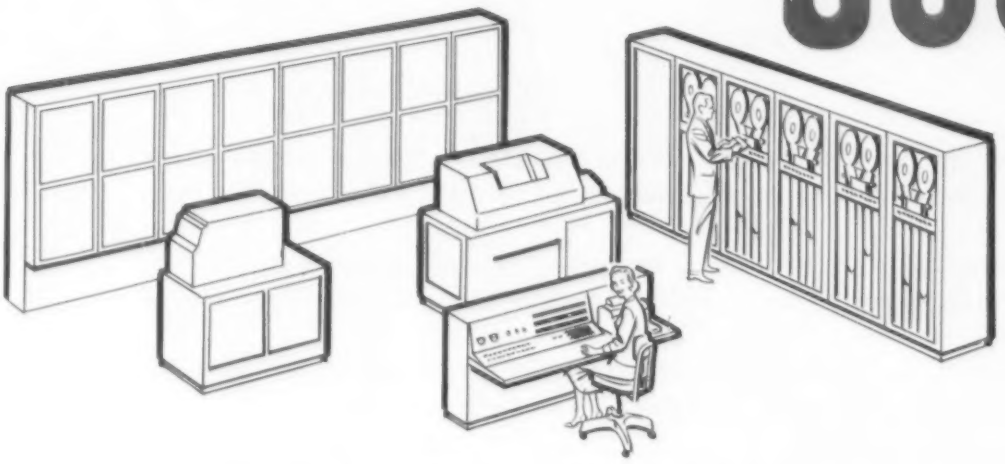

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- ★ **grow without re-programming (with its heavy costs)**
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Honeywell 800 is priced competitively with other systems. It cuts costs for floor space, air-conditioning, and power, and is backed by Honeywell's electronic experience and the type of service you have come to expect from Honeywell.

The all-transistorized Honeywell 800 is the only computer that gives you the ability to process several different jobs *simultaneously* — each *independently* programmed and automatically controlled.

No complex and costly programming is necessary to utilize the full efficiency of the Honeywell 800; a single powerful control unit supervises each and every independent operation speeding in parallel.

This achievement we call *automatically controlled parallel processing*. Its practical economic advantages are sizable for work loads large and small, business or scientific.

For example, you could run off a payroll, update your inventory and schedule production all at the same time, and all as independent jobs. And if your engineering staff needed to solve a complex scientific problem in a hurry, you could put that on Honeywell 800 too — *while data processing is going on.* (Incidentally, Honeywell 800 solves scientific problems more efficiently than computers especially marketed for this purpose.)

All these operations are meshed into a machine-determined schedule, always geared to utilize Honeywell 800 to its maximum efficiency. The machine does not wait for such relatively slow mechanical operations as card reading or printing. All programs are *automatically* dovetailed to fill in "dead time" when the computer would otherwise lie idle.

Honeywell 800 thus introduces heretofore unimagined simplicity, efficiency and economy in this vital area of programming and scheduling. Your entire day's work can now be accomplished smoothly and on schedule with several of your key programs operating in parallel and automatically controlled.

The profitable use of Honeywell 800 begins far down the business ladder to include relatively small volumes of work. Extraordinary capacity is already built into the basic system. This inherent capacity costs you nothing extra, but it can be utilized to accommodate your company's growth for years to come. Adding capacity to the basic Honeywell 800 System can be accomplished at any time in small steps and at small cost. No management need make such additions until they can efficiently and profitably use them.

And you can't outgrow Honeywell 800. Its tremendous potential capacity plus its ability to operate more than a dozen data processing devices simultaneously make it your profitable partner *indefinitely*. And with Honeywell 800 you will never again have to face the cost of re-programming.

ORTHOTRONIC CONTROL (an exclusive method of automatic record protection) plus a powerful checking system give Honeywell 800 unexcelled reliability. These features sharply reduce the time and cost of maintaining the absolute accuracy essential in both business and scientific data processing.

Does all this sound costly? Honeywell 800 is competitively priced with other systems. In a working day it can process more data per dollar than any other computer.

Both the equipment and the programs of Honeywell 800 are backed by years of experience. Honeywell 800 service starts with information and indoctrination. Next comes assistance in analyzing your application and training your analysts, programmers, coders and operators in the most efficient use of the system. Automatic programming and standard routines are part and parcel of every Honeywell system. Expertly trained Honeywell maintenance personnel staff every installation. Continuous personalized guidance and counsel is all part of Honeywell electronic data processing service.

As with the Honeywell DATAmatic 1000, this exciting new system can be leased or purchased.

PLEASE DIRECT ATTENTION OF YOUR TECHNICAL ASSOCIATES TO THIS SECTION

Honeywell 800 word:
12 *decimal digits, eight alphanumeric characters or* 48 *binary digits*

Magnetic core memory capacity:
4,096 *to* 16,384 *words*

Order structure:
three-address

Internal speeds:
single active address operations — 60,000 *per second*
three-address operations — 30,000 *per second*
information transfer rate — 140,000 *words per second*
accumulations — 125,000 *per second*

Magnetic tape (¾″):
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tape capacity — up to 20,000,000 *decimal digits*
number in simultaneous operation — up to 16
number directly connected — up to 64

Input:
card readers — standard, 240 *cards per minute; high-speed,* 750 *cards per minute*
number in simultaneous operation — up to 8

Output:
printers — standard, 150 *lines per minute; high-speed,* 600/900 *lines per minute*
number in simultaneous operation — up to 8
punches — standard, 100 *cards per minute; high-speed,* 200 *cards per minute*
number in simultaneous operation — up to 8

In Honeywell 800 you get:
1. *Parallel processing — up to* 8 *simultaneous programs*
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7. *On-line inquiry processing without special equipment*
8. *Multi-function instructions*
9. *Orthotronic Control*
10. *Random access storage (optional)*
11. *Paper tape reader and punch (optional)*

HOW TO GET MORE FACTS

If you would like more information about Honeywell 800, please let us know. We will send you complete details by return mail. Write Minneapolis-Honeywell, DATAmatic Division, Dept. I, Newton Highlands 61, Mass.

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ELECTRONIC DATA PROCESSING

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NEWS

Dedicate University Business Computer

Thomas J. Watson, far right, was present at the dedication of the new Western Data Processing Center at the University of California at Los Angeles. Others directly interested in the program are, left to right, Dean Neil H. Jacoby of the graduate school of business administration; Donald H. McLaughlin, chairman of the board of regents; and Dr. Vern O. Knudsen, acting chancellor.

America's first university computer center specializing in business management problems was dedicated recently at the University of California at Los Angeles.

Helping to inaugurate the $5 million Western Data Processing Center were Thomas J. Watson, Jr., president of International Business Machines Corp., and Donald H. McLaughlin, chairman of the university's board of regents.

The computer, an IBM 709, is the first of its kind to be given to a university. It's new two-story home cost $750,000, funded jointly by IBM and UCLA. The room housing the computer is the size of a small ballroom and is completely air conditioned. Electric power is supplied through its own generator.

Some of the tasks facing the 709 include research of complex management problems in manufacturing, distribution, raw materials utilization, transportation, and sale analysis. It is expected that it will help in simplifying clerical administrative work as well.

Broad areas of the Center's research will include studies of a universal programming language to facilitate communication among different computers, of information flow within, to, and from a business system, and of the problems of a highly centralized data processing system operating in a decentralized business.

Beside business problems, the Center will tackle problems in human relations, agriculture, politics, medicine and oceanography. Noncredit courses in machine operation and programming will be offered by the university. Conferences and special short courses for the professional community are also planned.

PFC Installs Univac II

Pacific Finance Corp. has culminated more than three years' research by signing a contract with Remington Rand for the installation of a Univac II computer which will be the heart of a centralized electronic data processing system.

Maxwell C. King, president, said the new system will relieve the 330 branch offices throughout the United States and Canada of a substantial amount of paper work. It will enable them, in his opinion, to handle a much larger volume of business with a nominal increase in personnel and facilities.

White Collar Union Is Clinic Topic

With a drive to unionize white collar workers already in its initial stages, the members of the Office Management Association of Chicago met recently in a half-day clinic session and at dinner to learn more about the situation.

Two speakers were on the afternoon program, Arnold W. Neuman, labor industrial relations consultant to management, and Joseph T. Meek, president of the Illinois Retail Merchants Association. The dinner speaker was E. V. Knaack, industrial relations manager of the International Harvester Co.'s West Pullman Works in Chicago.

All three speakers warned of what organized unions would do to the business office and its procedure and of the problems that would arise. They also indicated reasons why the white collar worker would possibly embrace organization today.

It was also pointed out that major unions, in an effort to extend membership to a size indicated in proclaimed goals, would go all out to bring the white collar workers under their wing.

Pointed reference was made by both speakers to the efforts of union boss Jimmy Hoffa to move into the office as reported in the October issue of MANAGEMENT and BUSINESS AUTOMATION.

Suggestions were offered to the assembled managers. The most concrete was that the white collar worker seeks recognition for his efforts and if he receives this normal acclaim for a job well done he will be satisfied in his work. Recognition comes in the form of incentive raises, incentive bonuses and even the compliment paid for excellence in work.

The white collar worker also needs to know that he has somewhere to go with a grievance or a problem, and, it was pointed out, it will be better if it is to understanding management rather than a union steward.

Plan Life Office Automation Forum

A Life Office Automation Forum, designed especially for users and potential users of magnetic tape data processing equipment, has been scheduled by the Life Office Management Association. It will take place April 13-15 in the Drake Hotel in Chicago.

The program for the two and one-half day meeting is being developed under the supervision of a subcommittee of the association's automation committee. This is the first meeting of its kind for the life insurance industry.

Three types of meetings are planned. The first is a general session meeting with addresses on subjects of widespread interest by authorities on electronics from within and outside the life insurance business.

There will be panel sessions presenting various aspects or different viewpoints on specific subjects such as planning and conversion cost considerations, operating cost considerations, organizing for automation, and automatic programming.

Wescon Papers Due

Authors wishing to present papers at the 1959 Western Electronic Show and Convention in San Francisco are reminded that they must register their intent by May 1.

Requirement is a 100-200 word abstract together with complete texts or additional detailed summaries. These should be sent to the chairman of the technical program, Dr. Karl R. Spangeberg, WESCON, 60 W. 41st Ave., San Mateo, Calif. The show is August 18 to 21.

Investment Firm Buys Share of Elliott

The Bessemer Securities Corp. of New York has purchased the 25 per cent interest in the Elliott Addressing Machine Co. formerly owned by the Saco-Lowell Shops.

In conjunction with this move, John M. Kingsley, president of Bessemer, has been elected as a director of Elliott. He is now on the board of International Paper Co. and American Smelting and Refining Co.

Fidelity-Philadelphia Trust Leases RCA 501

The Fidelity-Philadelphia Trust Co. has leased the new RCA 501. Scheduled for 1960 delivery, the completely transistorized general purpose electronic data processing system will be the keystone of Fidelity's automation program, according to Howard C. Peterson, president of the trust company.

One of the largest financial institutions in the area, Fidelity-Philadelphia has 25 offices and handles an average of 90,000 checking and deposit actions daily.

"The bank's work load is expected to more than double in the next twelve years," Mr. Peterson pointed out, "and a major, long-range program, centered on an electronic data programing system seems to us the only way in which this anticipated volume can be accommodated with maximum accuracy, promptness and economy."

Fidelity's 501 will have eight tape stations with a capacity of 68 million characters. The computer's high speed memory, with a storage capacity of 16,384 characters, will feed calculation results to an electrical-mechanical printer which will turn out reports at the rate of 72,000 characters per minute.

RCA President John L. Burns shows a high speed magnetic memory core unit from the 501 to President Howard C. Peterson of the Fidelity-Philadelphia Trust Co., left, and Stewart M. Walker, senior vice-president. The bank has leased a 501 to speed operations in its 25 offices.

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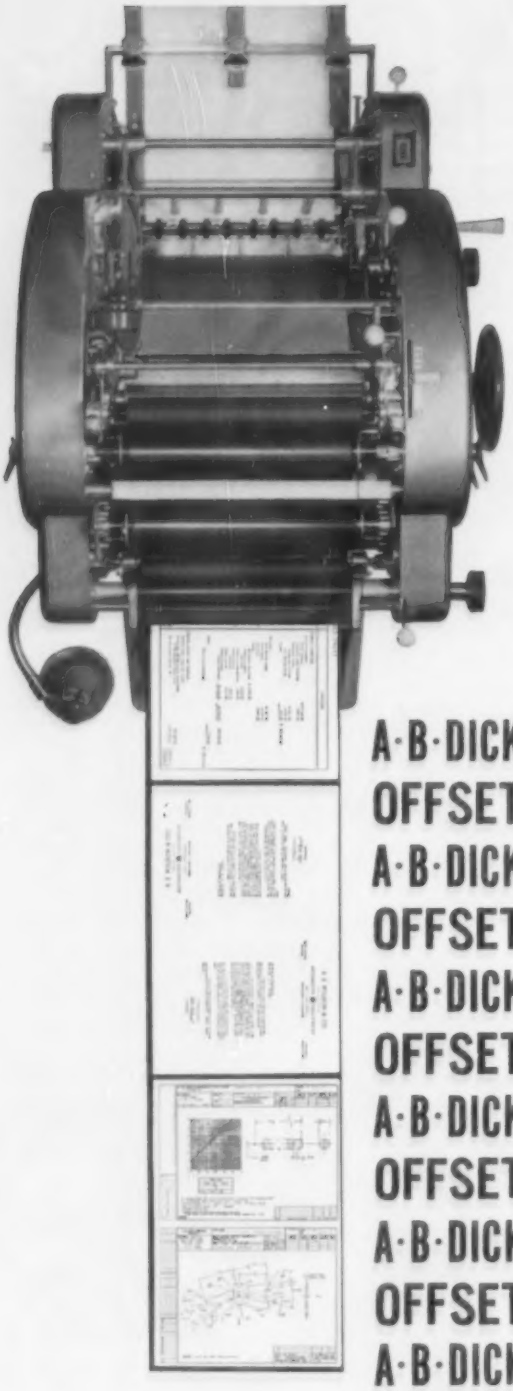

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Distribution V-P For Vari-Typer

John J. Opasser

Addressograph-Multigraph Corp. has announced the appointment of John J. Oppasser as vice president of Vari-Typer distribution in the subsidiary Vari-Typer Corp.

"The naming of Oppasser to this new post will mark a new era in the progress of Vari-Typer Corp. and give added impetus to the distribution programming," according to J. B. Ward, president of the parent organization.

Oppasser has been with Vari-Type since 1929. He was named director of distribution in 1957, shortly after the company was acquired by Addressograph-Multigraph Corp.

New Public Relations Chief for NABAC

Jack Craddock, assistant director of public relations and advertising for the First National Bank in Dallas, Texas, has been named director of public relations for The National Association of Bank Auditors and Comptrollers.

Announcement of Craddock's appointment was made by Franklin D. Price, a vice president of Texas National Bank in Houston and president of the national association. Price said Craddock assumed his new duties in Chicago on Feb. 2, and is reporting to F. Byers Miller, executive director of NABAC.

Craddock's appointment with NABAC makes him responsible for the public relations activities of NABAC proper, for its research institute, its school for bank auditors and comptrollers.

High Speed Microfilm Recorder Installed

A new high speed microfilm recorder, capable of recording up to 15,000 characters or 10,000 graph plotting points per second, has been installed at the Naval Proving Ground in Dahlgren, Va.

The system, which is to be used to print tabular data and to plot graphs computed by the Naval Ordnance Research Calculator, was built by Stromberg-Carlson. The NORC itself is a large, high-speed, general purpose digital computer. Uses include high-speed graph plotting of complex mathematical formulae used for computing problems of satellite trajectory, spatial navigation and hydrodynamics.

In operation, the NORC supplies all intelligence for the selection of alphabetical, numerical or graphical characters and their positioning on the screen of a "Charactron" shaped beam tube. The characters are then projected from the tube face onto the 35 mm. film and permanently recorded.

New York Manager For Cummins-Chicago

Albert P. Gollinott

Albert P. Gollinott has been named to the post of manager of the New York branch of Cummins-Chicago Corp.

For the past two years, Mr. Gollinott has been branch manager in Newark, N.J., and he has been with the company since 1946. He was recently elected a director of public relations for the Newark NOMA chapter.

News continued on page 48

Bankers watch as Magnetic Character Sorter—product of National Cash Register and Pitney-Bowes—sorts intermixed checks at speed of 750 items per minute.

Major Breakthrough In Paper Processing

Magnetic ink triumphs over banks' check-handling problem

By Arnold E. Keller

At long last, the automation of checking account bookkeeping has become a reality for the American banking industry.

Using MICR—magnetic ink character recognition—the new check processing technique brings a revolutionary concept to the banking field. Though developed specifically for banks, the new process may well be the solution to the paper work problem of every business.

MICR represents a major triumph in research efforts to develop a method of using source documents as direct imput for automatic data processing. In business, as well as in banking, the conversion of source material to cards or tapes is often the chief stumbling block to successful automation.

The banks are staggering badly under the

effects of a terrific check writing binge. Housewives doing their supermarket shopping, small businessmen paying their bills, giant corporations writing payrolls on automated equipment: together and with many variations on the theme, they wrote 13 billion checks worth 2¼ trillion dollars last year, establishing Americans as the world's greatest check-writers. This year the volume will increase by at least another billion checks.

The American Bankers Association estimates the check-volume handled in the nation's 18,000 banks and branches will continue to swell at the rate of a billion a year. Other estimates, less conservative, say that we will be writing 20 billion checks annually by 1963. To process this "avalanche", some method of automatic handling was mandatory.

After 5 years—a new language

MICR is more than just another set of initials in the already-formidable lexicon of business automation.

It involves a common-language which will be imprinted on checks and read by a new breed of machines. This equipment automatically will sort the checks, eliminating the tedious manual effort which bankers say takes up 25% to 40% of their bookkeeping department's time. In more sophisticated systems, the common-language read during check-sorting also will be placed directly into full-scale electronic data processing systems to accomplish complete automatic bookkeeping procedures.

Behind the development of magnetic ink character recognition methods is a remarkable five-year story of cooperation among banking interests, machine manufacturers, forms companies and printers. Pooling their resources, talent and time, they have evolved a numerical "language" which can be read by every layman check-user in the country; which can be processed by equipment of competitive design and which can be printed on any of the 400 different sized checks in use in the country today.

Establishment of the MICR common-language has been likened to development of the standard gauge railroad track. But it is doubtful if any effort of its kind ever has involved so many potential variations or the precision demanded by the intricate electronic devices which will be used.

The American Bankers Association got the ball rolling in this cooperative venture when it assigned a committee to study the feasibility of check mechanization.

Early in 1955, the ABA group called on machine manufacturers to take part in the program. Many of the major companies already were at work on character-recognition techniques of their own. The slow, painstaking job of working out a system in favor of which each manufacturer would abandon its own efforts and the subsequent development of system details have consumed the ensuing years.

A. B. Dick Offset Check Imprinter has automatic program control and can produce up to 9,000 copies per hour.

Breakthrough by ABA

The long and exhaustive effort has come to a climax. In mid-December, the ABA announced that final agreement had been achieved on a type font known as E-13-B. This would become the MICR common machine language for checks. The development said the ABA, "is regarded as one of the most important events in the history of bank operations."

In January, within a month after the ABA announcement, two of the giants of the business equipment manufacturing industry disclosed they had in production the check mechanization machines which would conform with ABA common-language specifications. A third big manufacturer revealed it would make its first installation of MICR equipment in Chicago in mid-1959.

In February, the ABA's technical committee prepared a final report to advise printers, check manufacturers and others in the field of the exact dimensions, specifications and tolerances they will have to follow to make automated check processing work properly. All were urged to coordinate their efforts carefully and move

General Electric's system, which can be adapted to handle from 20,000 to 200,000 checks daily, is designed on the building block principle.

ahead with caution so that they have a well-ordered plan which will eliminate customer inconvenience and confusion. But the report, in effect, triggers the actual imprinting of the MICR common language checks on a production basis.

Is this the big breakthrough in check mechanization? John A. Kley, executive vice president of the County Trust Company in White Plains, New York, thinks it is. Kley is the man who knows. He serves as chairman of the ABA's Technical Committee on Mechanization of Check Handling. He told MANAGEMENT and BUSINESS AUTOMATION:

"What has taken place in the way of a breakthrough is the end of the period of cooperation among the equipment manufacturers. They banded together to develop a system and a common-language font. This phase of it is over. Now they are going back to resort to their own genius and talent to develop the most effective machines possible on a competitive basis."

How small is small?

Although manufacturers and bankers alike are ready to move ahead with check mechanization, not all the questions that have arisen have been answered. One of the biggest question marks remaining involves the role of the small banks in check automation. No one is sure at this point how much equipment they will be able to afford and how far they will be able to go with it. Nor is there a solution to a simple matter of semantics: How small is small?

How will magnetic ink character recognition system work? Each manufacturer, of course, has its own features. But in general, all depend on the use of checks and deposit slips which are pre-printed with account numbers and other data in magnetic ink. This information will appear at exactly the same location, according to ABA standards, so that it can be read by equipment of all manufacturers.

When the checks reach a bank, the dollar amount for which they are written will be encoded on them (also in magnetic ink) during the proofing operation. They (or the deposit slips) then will be sorted automatically into any given order by a high-speed machine which reads the magnetic printing on the checks.

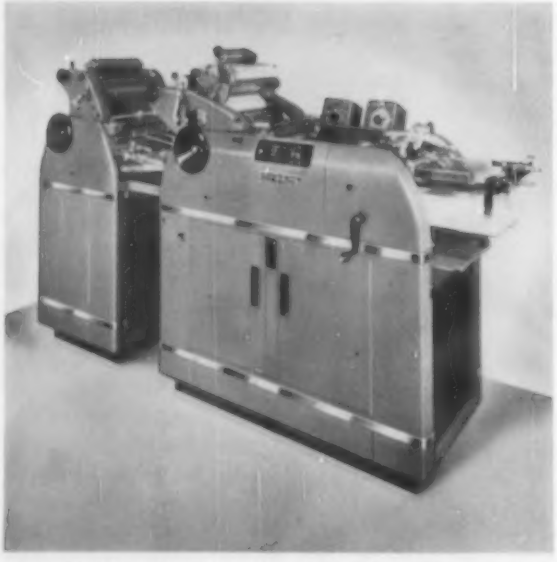
Out from under

For some banks this may be the extent of the checks mechanization program, at least at the outset. By itself, it will be a tremendous boon to paper-swamped bookkeeping departments. Other banks may be able to carry mechanization beyond this point.

An advanced step would be to link the electronic sorting of the checks directly into the use of electronic bookkeeping machines. And beyond this is the use of electronic sorting as an automated gateway to full-scale data processing systems in which checks are received and processed virtually without human handling.

The principle by which check mechanization equipment works is somewhat like that of the magnetic tape recorder. The ABA's common-language numerals are printed in an ink containing ferrous oxide. They are not magnetized while you carry around a checkbook in your pocket or while boxes of continuous-form checks sit in your company's machine accounting room waiting to be used. If they were, the specially-designed characters would lose the signal

As checks speed under "reading head," magnetized areas send electrical signals to "comparison device" which identifies the character. Example shows a "six" (enlarged) and its equivalent electrical signal.



New Multigraph Multilith offset duplicator numbers checks, imprints names and encodes in magnetic ink, all in one operation.

strength necessary for accurate machine recognition.

Instead, the magnetic ink printing passes under an energizing head as it moves through the automatic sorting machine. This gives the ink a charge which can be read by the scanning head as the check passes under. The scanning, or reading, head produces an electrical wavelength signal which is analyzed electronically and provides recognition of the character that has passed under it. This recognition directs the check into a hopper similar to the hoppers in punched-card sorting machines. The same recognition provides the imput for the accounting operations.

Although many technological improvements come into being at the instigation of a manufacturer who has created the equipment to make it possible, the opposite is true in the case of check mechanization. Magnetic ink character recognition is a reality now because the banking industry felt a critical need for some method of facilitating check-handling.

Henry J. Rohlf, vice president of the Mercan-

"This is the breakthrough"—John A. Kley

"It is obvious that equipment companies have zeroed in on the target." —Henry J. Rohlf

tile Trust Company in St. Louis, sums up the reason for this need very simply:

"There is a tremendous number of checks to be handled. We ought to be able to handle them automatically. And input should be as automated as possible, eliminating key-punching and other media such as punched-cards. Reading the information directly from the checks appeared to be the answer," said Rohlf, who is chairman of the Research Committee for the National Association of Bank Auditors and Comptrollers (NABAC).

High cost—low profit

Bankers have been hammering hard at this idea ever since the ABA's check mechanization project got under way. Speaking at a NABAC Automation Symposium, Vice President Forde U. Steele of the National Bank of Cleveland, pointed out that something under 50% of the total bookkeeping function is devoted to actual machine posting. "As much as 35% or 40% of a bookkeeper's time can be spent on rough sorting, fine sorting and filing checks," he said.

Steele told the symposium audience that in any electronics bank program, much of the savings to be realized must come at the pre-computer stage. "In fact," he said, "it is quite possible that the major cost savings possibilities are in the paper handling area . . ."

Another banker who followed this line of thinking was L. C. Small, assistant vice president of the California Bank in Los Angeles. He advised an ABA American Institute of Banking Audience:

"A large part of the cost of charging checks to customers' accounts lies in the physical handling of checks . . . If we had no computer, it would still be very convenient to have checks sorted and listed automatically by machines ready for posting by bookkeepers.

Mr. Kley singled out an even more critical motivation for the check mechanization effort: "Some banks have been worried that they simply will not be able to get enough people to handle the paperwork that develops as the volume of checks rises rapidly. The use of magnetic ink character recognition appears to be the best available method open to banks for providing better customer service and stabilizing their own costs in the future."

Appearing in Washington before a subcommittee of the Joint Congressional Economic Committee, Kley also outlined the economic needs of banking. At this hearing on recent trends in automation as related to economic stabilization, he noted:

"The margin of unit profit contained in most normal banking transactions is extremely small. . . . In this connection, it is interesting to note that in the 10 years preceding 1956, the average net profit after income taxes for all insured commercial banks was slightly more than 8% of the average total capital accounts of all of the banks involved. This is considerably lower than the average for industry." In a period of favorable banking income, he said, the cost of doing business reached an all-time peak, so that any influence which would tend to stabilize bank administration costs "is most welcome."

For more than two years John Kley's com-

New IBM Series 1200, designed for integration with data processing system

mittee undertook a study of all phases of the check mechanization problem. Working on weekends, vacations and whenever they could wrest the time from their normal banking duties, committee members travelled from coast to coast to meet with banking groups manufacturers, printers and research organizations.

In the course of this effort, the group studied a wide range of common-language media available to it. These included slave or carrier systems (in which data would be encoded onto a surface attached to or wrapped around the check) and non-carrier systems. The latter type consisted of codes or patterns and Arabic characters which would be readable by the human eye as well as machines.

Arabic is choice

The variety of coding techniques they investigated indicates the work that already had been put into this area of automation by various manufacturers. The committee reviewed binary or bar codes, miniature bar codes, large bar codes to be printed on the reverse side of the checks—all printed in invisible fluorescent ink or visible magnetic ink. They also saw Arabic character systems using both conventional printers ink and magnetic ink.

In July, 1956, the committee issued its first report, recommending the use of Arabic magnetic ink characters as check mechanization's common language. The main reasons for this choice:

1. Experiments indicated an error rate of only 1 in 100,000 with every indication that rate would be improved. (Subsequently it was improved considerably.)

2. The committee said both small and large equipment now in use in the printing trade could be used for pre-printing of checks. Post-printing at banks could be handled by present office machines—including the common typewriter—it reported.

3. Verification is simply a matter of proofreading, as in any printing operation, without the need to correlate to an accompanying code.

4. Magnetic inks were found to be least subject to mutilation and obliteration of all the media studied. They can be read through markings of all types and even through tapes which may be placed over torn checks. Studies showed the magnetic imprint remained and could be read electrically even when the ink had been removed and was no longer visible.

Accordingly, the check mechanization effort moved into its cooperative phase. Despite the fascinating technical aspects of magnetic ink character recognition, the most intriguing chapter of the story very well could be the manner in which competitive titans of the business automation industry banded together to solve the problem at hand.

Competitors Compare

To work with Kley's ABA Committee, the various companies formed an Office Equipment Manufacturers Committee. The members were Addressograph-Multigraph, Burroughs, General Electric, IBM, the Lithographers National Association, Moore Business Forms, National Cash Register, Pitney-Bowes, Sperry Rand, Standard Register and the Todd Division of Burroughs.

The following year, this group also established its Type Design Committee. It consisted of the same members as the parent group, with the

Continued on Page 36

By D. Ronald Daniel

Answers to these four questions will provide the basis for sound organization of the electronics group.

1. Where should the computer staff "fit in" to the company's over-all organization structure?

2. What should be the stature of the executive in charge of the electronics group?

3. How should the electronics staff itself be structured organizationally?

4. What should the relation be between the electronics staff and such existing groups as the tabulating department or a systems and procedures group?

PICKING THE COMPUTER'S BOSS / *a decision of import*

IF it weren't for people, the only criteria governing the proper organizational location of the computer staff would be the objectives of the system and the nature of its application.

However, a realistic consideration of this problem must take people into account, because they make or break an organization—whether it be an entire corporation or a functional unit such as the electronic data processing segment. Most important, then, is the required stature of the executive who will head up this activity . . . and those who will comprise the staff.

This means management faces two objectives —two decisions which will spell out the success or failure of the program—(1) the definition of the most appropriate organizational spot for the electronic data processing unit, and (2) the choice of the "head man" for the operation.

There are only three reasonable alternatives for the organizational location of an electronic data-processing group. These are: (1) the controller's department, (2) a new department created especially for electronic data processing, and (3) a functional department such as sales or manufacturing, or even in engineering.

The last of these alternatives, an operating department, is not a likely possibility. The only circumstance under which it can reasonably be considered is when a single operating department can justifiably use the entire capacity of the computer system.

If an engineering department can keep a computer going three shifts a day, all week, every week, there is real merit in integrating an electronics staff into that department. Similarly, if manufacturing applications, such as production scheduling and inventory control, constitute the full work load of the system, the computer group can well be a section of the manufacturing department.

In both cases, integration with the using department would have the advantage of ensuring a computer staff that would be sensitive to the needs of the machine's "customers."

However, these conditions do not often exist. Usually, a company finds that its computer's potential value can best be exploited if it serves several departments. Then the decision on placing

the computer staff resolves itself into a choice between the controller's department or the establishment of a new and separate department.

So far most companies have decided in favor of the controller. Their line of reasoning runs something like this: The computer is a new management tool that should be used to benefit the entire company; the one corporate official below the top-management level who can move with freedom across organizational lines is the controller; he is already associated with procedures and machines; therefore he is the logical man to plan and administer an electronic system.

A question of stewardship

This reasoning has been reinforced in the past by the fact that many of the early computer applications, notably payroll, were already the responsibility of the controller.

But as companies have gained experience and as applications have broadened, some of the early computer users began to question the almost automatic assignment of electronic stewardship to the controller. This questioning has, in some cases, led to the establishment of a separate electronic data processing department reporting as a staff group directly to top management. There are also a few companies who organized their computer efforts in this manner from the very beginning.

In appraising the merits of this organizational arrangement as compared with the more conventional approach of assigning the electronic data-processing function to the controller, one should examine three factors: (1) Objectives of the electronic system; (2) Nature and scope of the applications; and (3) Corporate strength of the controller.

1 In the early years, the primary objective of most computer installations was the reduction of clerical costs.

Now, an increasingly common goal is improvement of information for management through faster, more accurate, and more complete processing of needed data.

An additional objective (but to date not a widely accepted one) is the development of a computer system that can function as an integral element of the corporate decision-making apparatus. This may involve either the rendering of repetitive, nonjudgmental decisions by the computer itself or a review by the machine of numerous alternative courses of action so that management's selection can be put on a sounder basis than has heretofore been possible.

An important role

These three objectives represent increasingly sophisticated goals for electronic systems. It appears that as a company moves up this ladder, the controller's department is less and less likely to be the "best spot" for the computer. This is because such a progression requires the computer to play an increasingly important role in the over-all management process of the company, and it cannot play this role effectively if it is closely identified in the minds of the management team with one functional area (the controller's).

Two examples illustrate how a difference in objectives can affect the wisdom of placing the computer staff under the controller:

A midwestern manufacturer of light machinery leased a computer system with the goal of reducing clerical costs. The installation came under the jurisdiction of the tabulating supervisor, a member of the controller's department. Several accounting applications were programmed, and within one year the department eliminated 31 clerical and machine accounting jobs and released 13 pieces of punched-card equipment.

By contrast, another manufacturing company of similar size obtained its computer with the idea of improving its management information system. Again, the computer was set up in the controller's department. Progress has been very slow. The computer analysts have been unable to get agreement from sales executives on what information should be contained in the new series of reports. Recommendations derived from studies made by these analysts have been repeatedly re-

The Author

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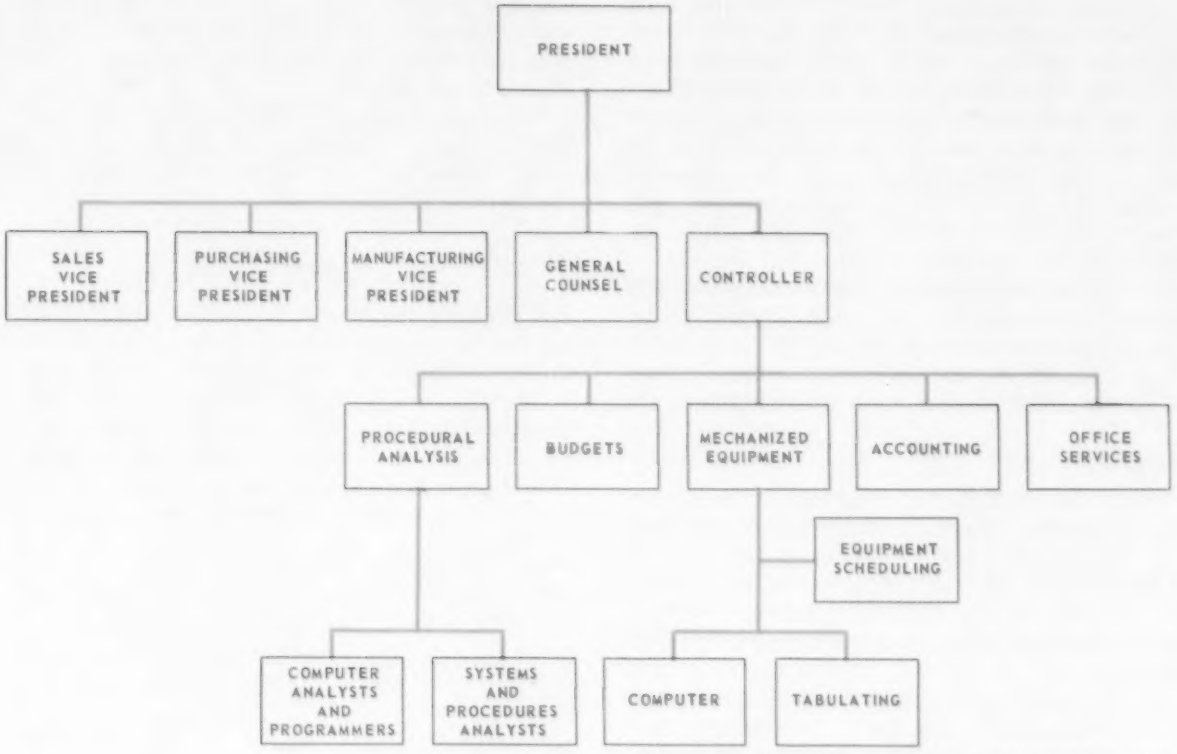
ORGANIZATION FOR
A MEDIUM-SIZED COMPUTER SYSTEM



The above chart is a simplified structure for a medium-sized computer organization as discussed on page 26.

jected by the sales manager on the grounds that the "controller's people have no business playing around with sales data."

Supposedly "improved" manufacturing reports are being ignored by line management for similar reasons. Nowhere has the introduction of the computer enabled the company to change how or when management decisions are made.

In general then, as a company's objectives for the use of electronic systems broaden in scope from routine data processing to sophisticated management decision making, there is an increasing probability that a separate electronic data processing department will be the more effective organizational vehicle.

2 Closely related as a factor influencing the choice of the best organizational location for electronic data processing is the nature of the applications. Experience has shown that the broader the range of applications, the stronger the reasons for the creation of a new department.

This is particularly true when there is an attempt to integrate the data processing requirements of several diverse functions into a unified system. Consider this case example:

One of the country's industrial giants installed a large-scale electronic system in its controller's department. The initial application was payroll, followed by several more major accounting jobs. Flushed with success, the controller laid ambitious plans to program an integrated system for inventory control and automatic purchase order writing, hoping to make substantial cuts in the clerical payroll.

In an effort to define the problem, the controller deployed his analysts like shock troops in the manufacturing and purchasing departments. He soon found himself in open conflict with vice presidents of both functions and unable to make any substantial progress. Operating outside of his own department, and without a strong identification with top management, the controller's effectiveness tapered off rapidly.

3 Controllers vary in different companies from mistitled head bookkeepers to powerful, trusted confidants of chief executives. When cast in the

latter role, the controller is often the most appropriate custodian of the computer system, regardless of the corporation's goals for its system or the breadth of the applications.

In many instances, however, the controller falls between the extremes defined above; he does not have the confidence of top management nor is he accepted as an equal by his fellow members on the management team. Both of these elusive qualifications are essential if the controller is to be effective in planning, implementing, and administering an electronic data-processing system that has broad objectives and that transcends organizational lines.

When the controller lacks the "corporate muscle power" necessary to carry out successfully a major electronics project outside his own bailiwick, then top management should seriously consider the creation of a separate department.

The 'who' and 'where' of it

Once the optimum location of the electronic data processing function within the organization has been determined, the issue of the type of person to head up this activity can be considered. The answer to this question of "who" will be strongly influenced by the answer to the "where" question.

If the computer function is placed within the controller's department, the man in charge must have different abilities than the head of a computer function reporting directly to the president (or executive vice president). Obviously, the two positions require executives with different levels of experience, administrative ability, corporate reputation, and general business "savvy."

The man reporting to the controller has to be a good staff man, versed in the company's financial and accounting procedures, and "a known quantity" to the controller. By contrast, the man reporting to the president has to be a well-seasoned person with knowledge of all major corporate functions (sales, manufacturing, etc.), capable of working effectively with and inducing action from department heads, and able to claim the confidence and support of top management.

The pattern varies

The important point to bear in mind is that there is no universally acceptable pattern for the man in charge of an electronics staff. Just what his qualifications and stature should be will be functions of "where" his job is located organizationally, and this in turn depends on such variables as the objectives of the electronic system, the computer's applications, and the ability and reputation of the controller.

The structure of the computer organization is a problem that varies less from one company to another. Three basic functions must be performed by a computer staff regardless of what a company is doing or hopes to do with its computer. They are: analysis, programming, and machine operations. What does need to be decided individually for each company is how these three functions should be related to one another.

The analysis-programming functions begin with the definition of a problem and end with a tested set of instructions for solving the problem on a computer.

'Togetherness' is goal

While they are frequently performed by different people, the functions are in effect two phases of one continuous process. Therefore, there must be nothing to complicate or inhibit communications between the analysts and the programmers. The organization structure in which they operate should provide a climate that will foster the development of a strong rapport between these two groups.

They should operate as two sections of one department or perhaps as one section. Where the two groups have been split organizationally between departments, there has generally been slow progress in developing a successful electronic system. For example:

A large naval activity set up its electronics organization with the computer analysts serving on the staff of the Executive Officer. The programmers were assigned to a machine processing division. This organizational schism seriously impaired the activity's electronic data processing efforts.

Avoid 'Empire Building'

Much of the analysts' work was unsound because it reflected a theoretical rather than a practical appreciation of programming techniques and machine capabilities and limitations. The programmers' work was unnecessarily slow because they could only communicate with the analysts through formal organizational lines.

Within the past year the activity has seen fit to reorganize its data processing function and has placed the analysts in the same division as the programmers.

In contrast to the intimate day-to-day contact that is necessary between analysts and programmers, the relations of programmers and operators are such that the two functions can be (and actually have been) successfully split. Thus, for example, analysis and programming could be conducted by one organization specifically set up for this purpose, and computer operations might be

handled by the controller's department along with the operations of conventional punched-card equipment.

There are, however, at least three important weaknesses to such a split. First, leaving the computer hardware physically and administratively under the jurisdiction of the controller may negate some of the value of creating a special department for the planning, analysis, and programming of electronic applications. It sometimes leads operating-department heads to feel that the controller is "empire building."

Second, scheduling of a computer may be more equitable and effective when carried out at a top-management staff level. This is particularly true when many applications are being processed for many different departments.

Third, a close organizational tie between programming and operations generally results in more "optimized" programs that are easier to operate and require less machine time.

No room for inaccuracy

Too often the relations and lines of communication between the computer staff and the tabulating department are taken for granted. These two groups must work closely together. In most companies, the input data for the computer are processed by the tabulating unit. Because the computer cannot cope with inaccuracy, these data must be punched, verified, sorted, and edited at unprecedented levels of quality. Control over this quality demands a strong joint effort on the part of both the tabulating and the computer staff.

"Our auditors insist that everything be double-checked."

Similarly, economical machine scheduling demands close coordination between the two groups. In most companies the level of computer usage achieved depends on the availability of input data from the tabulating department. Such coordination is easier to obtain if its importance is recognized and if steps are taken to ensure rapid and uncluttered communications between the two groups at the level where such matters can be effectively handled.

What about 'systems'?

The need for cooperation between these groups is so vital that some firms have established a small tabulating unit under the jurisdiction of the computer operations manager so that responsibility for the over-all quality of data flowing through the computer system can be centered in one individual.

The relations just discussed concern the operations unit of the computer staff. A counterpart situation affects the analysts and programmers. This is the relation between these people and an existing systems and methods department. Both perform analytical functions.

In some cases the computer analysts and programmers are actually members of the systems and methods department. Where they are not, it is important that their respective responsibilities be clearly spelled out.

For example, who decides whether a procedure should be programmed on a computer or handled manually? Or, if the head of the purchasing department wishes to consult with someone on the possibility of streamlining a phase of the purchasing function, does he call in a computer analyst or a methods man?

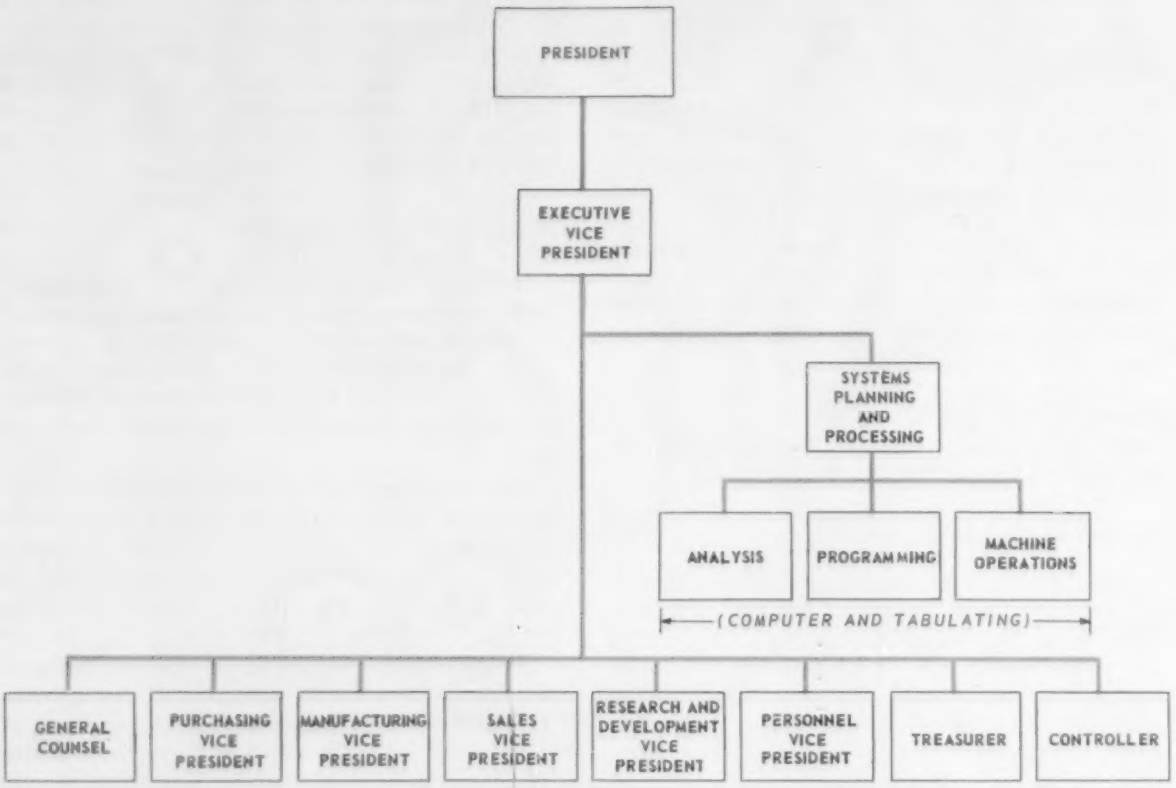
The controller—pro and con

To prevent unnecessary friction and resentment, and to ensure maximum value to the company, such questions should be anticipated and steps taken to resolve them in an orderly manner.

Just what these steps will be varies from company to company. However, the key point is to recognize that the introduction of a computer requires a re-examination of the responsibilities of such groups. The realization will generally provide the groundwork for hammering out just what the relations among these various groups should be.

To tie together what has been said about the organization of the electronic data-processing function, two charts of basic organization structures for accommodating a computer staff are

ORGANIZATION FOR A LARGE-SCALE COMPUTER SYSTEM



A simplified example of a larger manufacturer shows system processing applications for several departments with computer directly under top executives.

shown. The two structures are for fundamentally different sets of conditions. They are intended to be illustrative only and do not represent "standard" organizations.

The first depicts, in a greatly oversimplified manner, a manufacturing company with a medium-sized electronic computer installation. The machine's applications include payroll and labor distribution, accounts receivable and accounts payable, and some other miscellaneous accounting jobs. The company hopes, through its computer, to reduce the clerical payroll in the controller's department by 10 percent and to relieve a strain on the capacity of its tabulating equipment. Note that the computer analysts and programmers constitute *one* unit of a procedural analysis section under the controller. The head of this section is responsible for all systems work throughout the company and coordinates the activities of computer analysts and methods men where their efforts might conflict.

The importance of not creating any artificial barriers between analysts and programmers has been recognized, as has the need for coordinating their activities with those of existing methods and procedures personnel. Finally, the need for cooperation between computer operations and punched-card-equipment operations has been anticipated by having one supervisor responsible for both functions and by centralizing the scheduling of all equipment.

The second example represents (again in simplified form) a considerably larger manufacturing enterprise with an extensive, large-scale electronic data processing system. The system processes a variety of applications for many departments. While the company is hoping to break even dollar-wise on its computer, the primary avowed goal is to improve the over-all quality of the information available to management.

In this organization, responsibility for all procedural analysis and machine processing of data

has been fixed in a staff department reporting to the executive vice president (Even the punched-card equipment is located here.)

This department acts as a service group to all other departments, including the controller's. At the same time, the department head has functional control over the small procedures staffs (not shown) maintained by some of the major departments—for example, manufacturing and the controller's department.

Company-wide coordination

One obvious advantage of this alignment is that it provides for company-wide coordination of all work concerned with systems. A second advantage is that the analysts in the systems planning and processing group can examine every problem without being predisposed to a particular method of solution. A problem may be solved through a computer application or a punched-card job, or it may be solved by an improved manual method of handling. This group considers all alternatives, evaluating the costs and time requirements of each.

Once a problem has been defined and the best approach blocked out, it is turned over to a programming unit, which is staffed to code computer programs, wire tabulating plugboards, or complete the detail in a procedure that is to be performed manually.

About committees

In addition, this organizational setup eliminates many of the inherent weaknesses of the arrangement in which the electronics staff is located under the controller.

For instance, by identifying the computer with top management, a company creates a climate in which it is easier to enlist and sustain the cooperation and support of department heads. Also this arrangement facilitates the selection of the best qualified executive in the company (or out of it) to direct the electronics effort. This avoids the problems that arise when this responsibility is assigned to a poorly qualified controller. And finally, such administrative problems as machine scheduling and selection of additional applications can be resolved more easily and effectively at the top-management level.

No discussion of computer organizations would be complete without a brief section on the role of committees. Two reasons are generally given for the use of committees as an approach to an electronics project. First, a committee consisting of representatives of several departments supposedly ensures a balanced, company-wide point of view. Second, many companies today establish committees to guide major projects simply from force of habit.

Despite its popularity, the "Electronic Steering Committee" has more often than not found its progress to be very slow. Its members have other responsibilities to which they must give priority; decisions are few and far between; and stalemates on important questions are not uncommon.

Where committees have been used effectively, they have been used either: (1) To conduct the initial inquiry into electronic feasibility up to the point where a staff operating on a full-time basis is named to carry out a detailed study or the project is abandoned, or (2) To act as a sounding board in the development of plans for electronic systems and to provide a medium through which the company can advise management on its progress in fulfilling these plans.

The best spot

In summarizing the problems of organizing the electronic data processing function, these points warrant emphasis:

The definition of the most appropriate organizational spot for a company's electronic data processing activities, and the determination of the required stature of the executive who heads up these activities, are two problems that demand highly individualized attention in each company. The controller's department is not necessarily the best location, and the controller is not necessarily the best qualified man.

In fact, there are no standard answers. However, in ferreting out the best solutions, there are standard criteria that should be considered. These include the objectives of the electronic system, the nature and the range of applications, and the strengths and weaknesses of the controller.

In the end, it's still the people!

Certain principles of organizing electronic data processing successfully have evolved over the past five years that do have general applicability to all types and sizes of companies. These include the absolute requirements for close organizational ties between analysts and programmers, the desirability of maintaining similarly close ties between programmers and operators, and the need to spell out unequivocally the relations between computer personnel and such groups as methods and procedures and tabulating.

At best, a sound organization structure merely provides the framework within which the talented individuals can operate for the common good of an enterprise. In the final analysis it is people, and only people, who determine the success or failure of organization efforts. ■

By Eugene Whitmore

Punched Cards Save A Small Texas Business

An integrated accounting and merchandising system brings new life to a small wholesale grocer —boosting both sales and profit.

A PUNCHED-CARD data processing system has rushed new life into the Groce-Wearden wholesale grocery operation in Victoria, Tex.

Without the automated accounting system now in use, top management, in the person of Joseph Wearden, president, admits that competition with chain stores and supermarkets would have driven this medium-sized company out of business. As it stands today, however, automated billing and sales analysis, accounts payable, daily sales reports, cost and profit figures, a tight control over inventory and a warehouse keyed to the punched-card system enables customers to buy from G-W at prices which allow them to meet big line competition and survive.

At a time when other wholesale grocers were liquidating and going out of business, Groce-Wearden assumed a positive policy of drastically cutting mark-ups and handling and selling merchandise at previously unheard-of low costs. In addition, the company announced that it would help its retailers modernize and cut their own costs to meet the competition of the giants.

To accomplish this, G-W set its machine accounting department into operation by installing 15 tubs of IBM cards, a key punch, one sorter, one collator, a reproducing punch, two summary card punches, and two accounting machines. Four employes work the day shift and four more work from 5 p.m. until midnight to keep control records up to the minute.

In its operation, Groce-Wearden handles approximately 6,500 items, each with its own IBM card in the 15 tubs in the accounting department.

On receipt of an order from a company salesman, three header cards and one detail card for

First step in system is pulling of pre-punched cards from tub file for items appearing on customer's order.

every selling unit on the order are pulled. Selling units correspond with the manufacturers' units, and G-W does not break boxes or cases.

The header cards carry the following data: type of customer, name and address, how collections are made (cash, check or weekly charge), invoice number, and any special arrangements (such as sale of tobacco, snuff, cigarettes or coffee on a net billing basis).

Prepare order for warehouse

Other data punched into the cards includes weight, advertising and promotion allowance, cost, selling price, and date.

The detail card is punched to show warehouse (Victoria, Bay City, Corpus Christi, or Donna, Tex.), salesman's number, customer's number, warehouse location (bin, bay, rack), containers, class, item code, pack, size, commodity description, advertising allowance, promotion allowance, weight, unit cost, unit sales price, and special price (when such prevails).

These items require 70 columns of an 80-column card. The 10 remaining columns are reserved for special prices and other records necessary during special sales drives or similar activities.

The cards go into the accounting machine which produces a three-part invoice, and a shipping order. The latter moves to the warehouse for order picking.

Green means 'Go Order'

The warehouse, as a part of the program, has been arranged in the same sequence as the IBM cards in the tubs. Every bin is numbered and every lot of merchandise is numbered and always in the same bin.

Each bin of merchandise holds two other cards —one is yellow and shows quantity in stock, the other is green and signals the reaching of minimum stock required for the item. When minimum is reached the green card is pulled, added to a list, and sent to a buyer as a guide for re-ordering.

With invoicing complete, the cards go through the summary punches and again are put through the accounting machines to produce the daily report for management. This shows day-by-day sales by salesmen, the cost, selling price and profit.

A profit picture every day

As President Wearden points out, "At the end of each day's business, we know where we stand— our sales, the sales of each salesman, cost of goods sold and the selling price. This gives us an accurate pictures of the day's profits. Operating, as we do, on a close margin, we feel that this report is one of the most important products of our accounting system."

Reports are made from each of the four branch houses and each is divided into two classifications —groceries and produce. This means a total of eight reports each day.

With the merchandise arranged in the same order as cards in the tubs, there is an important saving in warehouse cost since back-tracking and confusion in order picking and packing has been eliminated. At the same time, no merchandise can leave a warehouse without an invoice for the customer.

In another time-saving, money-saving step, all customers' ledgers are posted from a copy of the daily sales report. They are billed monthly for the exact amount of shipping weight on merchandise purchased (this information is on the detail cards). Freight bills are calculated for each truck's total lading and expenses, so if a customer receives one twentieth of a truck's total lading, his

Cards are keypunched with such information as quantities, warehouse location, advertising allowance, commodity description, weight, unit sale price and even special price prior to the running of the order through the warehouse.

share on the bill is one twentieth of the full amount. This attention to detail is another point in the company's fight to keep its customers on a level with the big chains and supermarkets in the price battle.

Automation has also contributed in a large share to the company's ability to pass along advertising and promotional allowances from manufacturers to retailers. Groce-Wearden has 1,800 such allowances on contract.

'We never miss a discount'

The data is punched in every card for items which carry promotional or advertising allowances. Careful "policing" assures the manufacturer that dealers perform the services for which allowances are made, and similarly, the company watches manufacturers to see all allowances are paid to customers.

From the punched cards, a report is made for every dealer entitled to an allowance. Checks for the amount are mailed quarterly. Were it not for automation, Wearden said, this burden would be mountainous and endlessly confusing and expensive. If it were a manual job, one or two extra staff people would be required to do the checking alone. As it stands, the allowance accounting is a by-product of punched cards.

The accounting system has simplified the routine in accounts payable. The company has a policy: "We never miss a discount." This is important to a low-cost operation. It also means that suppliers must furnish invoices in duplicate—one for the main office and one for the branch office involved in the purchase. First step in the system is to check the invoice to determine that extensions, discounts, allowances and the like are correct. This is done manually by calculating machines.

The invoices are then coded to show payment date and sorted alphabetically and by number. They go next to the IBM department for card punching after which a listing of invoices is run on the accounting machines. This list becomes a permanent record. The cards produce a charge notice to each branch—this gives date, register number, vendor and amount. The invoice copy is attached to each of these notices and sent to branches for checking and for their records.

For quick and accurate identification, each of the company's 700 to 800 suppliers is coded with an alphabetic code up to 10 letters.

Header cards are checked against invoices in the invoice file, and detail cards show vendor number, register number, invoice date, supplier's name (10-letter abbreviation), city, department and code, discount, deduction, invoice amount, entry date, account number and date paid.

An accounting machine writes the check which is in two parts, a check and remittance advice.

The machine accounting department is a two-shift operation. Four employes work the day shift and four more work at night to complete all reports for the day by midnight.

The detail cards are used to create a purchase journal and check register, also a part of the company's permanent records. Both journal and second part of the remittance advice show the same data which appears on the cards. This facilitates quick checking in case of error or an occasional need to total purchases from a given supplier over a given period of time.

Cards are a cost saver

If a branch is involved, the branch checks the charge notice against the branch's receiving record. If correct, the charge slip copy is attached, and both are returned to the home office audit clerk. The branches keep one copy of the invoice and one copy of the charge slip. This system eliminates the need for a ledger (card or sheet) since the check register, copies of checks and other records are sufficient.

Modern, punched card accounting has proven to be a cost saver. Previously, to handle the same volume of business, it has been estimated that manual accounting would require at least 11 more employes in accounts receivable and accounts payable, and an additional number of warehouse employes in Victoria alone.

With the same equipment and system used at the three branches, it is possible to say that a total of 35 to 40 employes are freed from this activity, not including warehouse extra help. This means that anywhere from $3,500 to $4,000 a week is saved in extra salaries alone.

But this saving is not considered the most important advantage of punched-card accounting at G-W. President Wearden points out that the system is expanding at the home office as well as in the branches, and it is expected that soon payrolls and other accounting jobs will be handled by the same equipment.

Joseph Wearden, pioneer Texas grocer.

The accounting machines, he adds, are handling more and more figures, and the firm is finding, and will find, more ways to reduce its costs and customer costs. The daily reports, for one instance, give vital information on buying and inventory which makes it possible to divert capital from warehouse stocks to other needs such as financing new stores or remodeling for customers.

The goal is to keep merchandise on hand for shorter and shorter periods of time as the company becomes more efficient in buying. Punched card accounting, in Mr. Wearden's own words, "is a definite aid in reaching this goal."

Another viewpoint was expressed by veteran

Burroughs Sensimatic machines are used for daily posting of accounts receivable.

One of two IBM accounting machines which prepare invoices and orders, run inventory reports, and handle accounts payable.

Royce C. Wood, executive vice president, sales manager, buyer and a former road salesman for the company.

"My first experience in the food business," he relates, "was in a big, old-time grocery and general store where we did about a million a year and paid our bills each fall—if crops were good! Otherwise, we paid them a year later. That store is out of business, as are most of the wholesalers who supplied it."

The password to profit

"Today," he added, "we send each customer his week's statement every Saturday morning with 'Statement payable weekly as received' prominently printed across the bottom. Competition, and the need to eliminate losses, have forced this collection policy which is, in the end, healthier for everyone—manufacturer, wholesaler, retailer and consumer."

Wood views the automated accounting system as a money-maker for the company. "As a buyer," he said, "I know what we have on hand each day. I can see the inventory record produced on the IBM machine in a few minutes. This tells me we have 5,000 cases of merchandise on hand. To count this inventory physically would take four or five hours.

"Now, with our tabulated records on all items, we know exactly what we have in stock at all times. This means we have increased merchandise turnover, and in this business, 'turnover' is the key word in profit making.

"There's another advantage," he added "as sales manager, I can watch a salesman's or dealer's volume and know every day the exact status of each. If a salesman's profit picture shows up poorly, we have the facts to show him. He might be satisfied with selling someone 'a truck load of merchandise," but the analysis shows this included coffee, sugar, flour and tobacco, items which make for very little profit.

Greatest 'tattletale' in the world

"He learns that his efforts are not channeled in the right direction. Such information, received in time, can correct a mistake or a trend before it becomes harmful to him and the company. There was a time when we had to wait until year's end to learn if we had made any money. Now we know every day."

The little punched cards are the greatest "tattletales" in the world, Wood continued. He uses them to find out if anything appears to be going wrong. If a shipment is delayed, the cards warn that inventory is dwindling and it is time to start a follow-through check to find out why the order hasn't been delivered. This has resulted in a 2 per cent allowance margin for goods out of stock before there is concern. At the same time the number of out-of-stock items has been reduced to about 1 per cent.

The advantages of the system are viewed from still another area, that of advertising and sales promotion. C. A. Dickerson, Jr., a director and advertising manager, points out that speed, readability of paper work and greater accuracy have resulted in a definite sales advantage to the company.

When paper work was manual, the warehouse men often were unable to decipher some of the handwriting of the office staff. Mistakes were inevitable, and mistakes meant lost customers.

The area of improvement, in his estimation, is within the realm of price changes, discounts, "specials" and promotions. More than 200 con-

Orders are "picked" from merchandise bins which are numbered in same sequence as printed order forms.

tracts between the company and vendors call for either an advertising allowance or promotional allowances. These contracts cover 1,800 items and are subject to rapid change. This means company records and accounts-payable information must change with lightning speed also.

"As an instance," Dickerson explained, "at one time we had three separate deals on one product alone—Tide, a washing preparation. Keeping track of all three to the advantage of our customers and ourselves could be a full-time job."

A vision of success

Because of the accounting system, he added, G-W can take advantage of special deals and promotions if it knows about them in advance. It goes a long way toward helping to prepare ad campaigns and promotions for the merchandise. In short, it allows the dealer to compete with the chain stores and supermarkets. Displays, price tags, posters, advertising copy and the merchandise reach each store on a time-table schedule.

Finally, but none the less very important, automation has made it easy for the customer to order. In turn, this has reduced selling costs. The whole idea here revolves around a catalog and price book —128 pages long with more than 7,000 items described, listed by number and priced.

These books are printed every three weeks and go to the customer weekly to be used as order books. The merchant can simply write in the quantity of merchandise of each type that he wants and then turn the book over to the driver or salesman for prompt return to the office. Automation steps in to fill this order.

Each time a customer returns a book he receives a new one in its place. To keep prices up-to-date, regular bulletins announcing price changes go to each dealer, even though his book is never over three weeks old.

This order book and catalog is produced right in the company's own offset printing department. Masters of each item, showing accounting number, merchandise, size and price, are made on an Addressograph. Because the company now prints its own promotional and business forms, it has a complete department operating two Davidson 33 offset presses, a Robertson camera, vacuum frame, paper cutter, the Addressograph, a Graphotype and a Bostitch stapler. These have all been put to work as selling tools.

The combination of all this equipment into an integrated system of accounting and merchandising has brought Groce-Wearden to a position where it now has capital and surplus in excess of $12,000,000, a good sized investment in a going concern. It pays its bills every Thursday, 52 weeks a year, and it has a high credit ranking. Sales have jumped six times over the 1946 volume in a time when other similar operations were folding. There is nothing but success in its vision of the future, and punched cards will play an increasingly important role. ■

An RCA 501 system, to be installed later this year, will be integrated with the communications network.

Computer Will Complete Corning's Nation-wide Data System

A 12,850 mile data processing system, linking eight plants, 36 sales offices and 10 communication centers, has been placed in operation by the Owens-Corning Fiberglass Corp. of Toledo, Ohio.

Designed to improve both customer service and company communications, the network will eventually be integrated with a high speed electronic computer. The latter, an RCA 501 all-transistor machine, is scheduled for installation later this year.

The new fully automatic Teletypewriter communications system — called a Bell System 81-D-1—will cut the processing time for customer orders by two to three days.

Orders written on Teletypewriters in any one of the nation-wide sales offices will be routed automatically to the proper plant. The receiving machine at the plant will print the order on a reproducing master which is used to prepare customer acknowledgments, shipping orders and various internal copies.

When the computer is installed the order processing time will be further reduced. Incoming orders, received on punched tape, will be fed directly into the machine. The computer will price the order and print out an acknowledgment copy and a shipping order.

The computer memory will retain the order information until shipment is completed and will then print the invoice.

Heart is in Toledo

Magnetic core memory storage of the computer will provide Corning with the current order and inventory status of any of the 40,000 items produced by the company.

Heart of the communication system is the switching center, located in downtown Toledo. All data is processed on punched tape and each message is prefixed with a two-letter code. The code controls the delivery of messages to their proper destination.

At the switching center, which houses enough equipment to fill two boxcars and contains more

Heart of the Owens-Corning communication system is this switching center located in downtown Toledo. The control board, center, provides information regarding the status all lines and stations in system.

than 100 miles of wire, several safeguards are engineered into the system to prevent loss of messages.

If by chance an operator types an incorrect directing code the message turns up in tape form on a special machine in the center, and at the same time, an alarm sounds to alert an operator that it needs attention. The operator can then re-direct the message to its proper destination.

A control board at the center provides information regarding the status of all lines and stations on the system and permits full, direct control over the entire operation.

'To provide the best service'

The new system speeds the flow of information by eliminating intermediate relays and greatly reducing the manual handling of messages. Previously, Owens-Corning messages had to be relayed by hand through the network of circuits. But now they are automatically routed to required points at the speed of 75 words per minute.

At several of the company's plants the Teletypewriter operators receive outgoing messages from company personnel on dictating equipment. A plantwide automatic transcribing hookup allows messages to be forwarded to the communication department by simply dictating into a phone-like instrument located on the employe's desk.

Harold Boeschenstein, president of Owens-Corning, views the new service as "an important step in our continuing efforts to provide our customers with the best service."

The company's products, which are sold to more than 4,000 accounts, can be classified into two broad categories: (1) general products, which include Fiberglas "wool" products, used for thermal insulation and acoustical applications; Fiberglas bonded mat products, used in built-in roofing, protective wrapping for underground pipes and other applications; and Fiberglas fiber packs, used in various types of filters; and (2) textile products, consisting of strands, yarns, coated yarns and mats used by other companies as electrical insulation and in the manufacture of decorative and industrial fabrics, insect screening, and reinforced plastics. ■

Harold Boeschenstein, right, president of Owens-Corning, sees first message go over the company network. H. A. White, general manager of the central area A. T. & T. Long Lines Department looks on as Miss Jo Fanelly, teletype supervisor, handles the keyboard.

Major Breakthrough in Paper Processing

Continued from Page 20

exception of the lithographers' organization. Its goal was to establish the technical aspects of type characters and printing so that the MICR symbols could be read by equipment of all the companies.

Still later, five of the firms—Burroughs, IBM, NCR, Sperry Rand and GE—formed a Machine Manufacturers Committee to make an appraisal of the engineering reliability of magnetic characters. They also formed a Type Font Committee to coordinate requirements of the manufacturers regarding type font shapes as recommended by the larger Type Design Committee.

How did the ABA manage to get so many different competitors pulling in the same direction to construct an effective MICR system?

NCR's Magnetic Amount Printer imprints amounts on media as items are put through proofing operation.

First came fluorescent

"It wasn't easy," admits Chairman Kley. "It took time and education and trial. These people had spent a lot of money in other directions. But once they came to the realization that it was better for everybody concerned to have one way of handling mechanization instead of five, we went places. That was the big problem—the manufacturers had five different systems they favored and use of more than one of them would have negated the effectiveness of the entire program. But we were working with wonderful people and we're proud of them and the way they handled this."

An excellent example of the involvement some of the participants had in other methods was Burrough's venture into fluorescent coding. Burroughs in a cooperative project with the Central-Penn National Bank of Phila., installed equipment which began encoding checks and deposit tickets with invisible fluorescent symbols in October, 1955. In May, 1956 — only two months before the adoption of MICR as a common language by the American Bankers Association—preparations began to install fluorescent sorting equipment. And by January, 1957, electronic fluorescent sorting operations began.

This technique now has been replaced in Burroughs equipment by magnetic ink character recognition meeting ABA standards. But the company considers the experience it gained as invaluable. And it reports the sorter it used in the Central-Penn experiment is the forerunner of the magnetic ink sorter that has become one unit of Burroughs new integrated bank automation system.

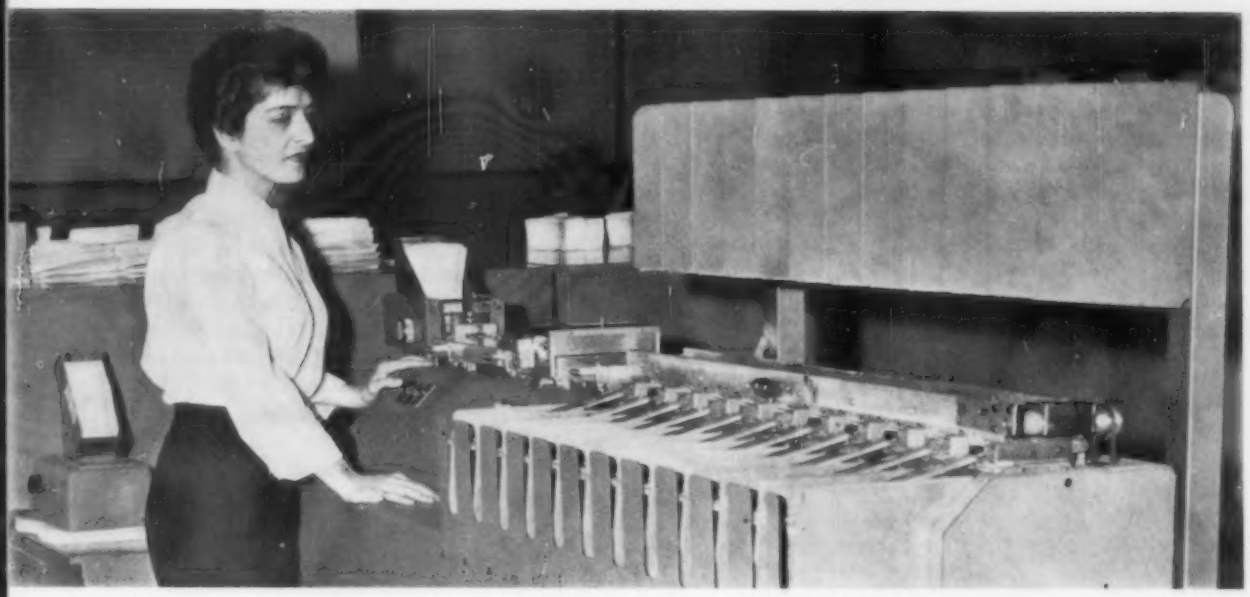
Other manufacturers had their own character sensing procedures at various stages of advancement. These, too, were abandoned. But giving them up represented a loss of time and effort. In some cases, a stumbling block arose.

One of the major difficulties was encountered in the course of determining placement of the MICR common-language on checks. The ABA group had turned this job over to the Business Equipment Manufacturers Committee so that the machine companies could decide on a location best suited to their own needs.

The top—or the bottom?

But after three months of discussion, the problem was turned back to the ABA Technical Committee because of what was termed "some basic and unreconcilable differences of opinion" within the manufacturer's group. The point of disagreement was simple—should the code appear on the bottom edge of the check or the top edge. Most of the manufacturers favored bottom-edge encoding. The chief proponent of top-edge encoding based its stand on the difficulty of adapting bottom-edge encoding to punched card checks.

Taking up the challenge, the ABA Technical Committee began studying the two viewpoints. At one point, it called in an independent consulting organization to help decide a phase of the problem. Its final recommendation was to utilize the bottom edge of the checks, with cer-



Burroughs Corp. Fluorescent Sorter, developed in 1955 for a Philadelphia bank, was forerunner of present magnetic ink sorters.

tain modifications for imprinting the MICR data on the bottom of punched card checks.

Subsequent ABA Bank Management Commission reports told of decisions on location and arrangement of magnetic ink characters, account numbering and check imprinting. Then, in July, 1958, the ABA committee announced that the machine manufacturers had agreed upon an acceptable type font. They also recommended a field evaluation test to determine the over-all reliability of the type font and the accuracy, tolerances and economy of the printing and imprinting.

Selected printers representing various organizations in the trade and using different types of printing equipment were asked to print and submit samples for this field trial.

It was the data gathered in this field evaluation which enabled the ABA Committee to draw up its February report on printing specifications —the document which gives the go-ahead signal for actual MICR operations.

Banks are ready

A representative of one participating corporation summed up the accomplishment—with obvious admiration for the ABA Committee's efforts—this way: "What was needed was a single machine language. Once the ABA decided what form it should take, it sort of put the pressure on the equipment industry to come up with the answers. It's the first time it ever happened. And it worked."

Now that MICR is a reality, are the bankers ready for it? Edward T. Shipley, auditor of Winston-Salem's Wachovia Bank and Trust Co., who served on both ABA and NABAC automation committees, replies:

"The decision on a type font lowers the final barrier to magnetic ink character recognition. A great many banks are ready to go ahead right now with actual operations. I believe the first encoded checks will be in use by the end of February. I hope our own printer will be producing them within a matter of weeks."

Hardware salesmen are ready

Encoding the documents, however, they use will be only a small portion of the job for America's bankers. They also will have to begin choosing the equipment they will use to process those documents. And the choices will have to come from a wide range of equipment. For the manufacturers did not work as hard as they did on MICR development out of sheer altruism. They have the hardware they feel will do the job. The banks will be hearing about it in great detail in the future.

General Electric's Computer Department at Phoenix is the manufacturer with the least language-changeover problems as the result of the ABA Committee's MICR decision. The new common language is closely related to the magnetic ink system GE had been using in the past, a technique developed at the Stanford Research Institute for use with the much-publicized

ERMA installation at the Bank of America.

The public relations department at Phoenix, however, is not too happy over ERMA's publicity. And while GE's banking automation equipment may be a descendent of the pioneer installation, one spokesman said the new equipment is "completely unrecognizable from the original ERMA."

Something for everyone

All its systems feature computers that handle information read directly from source documents, General Electric says. Also a part of each bank automation system is a document handler/reader which reads, sorts and sequences the checks or other media at the rate of 750 a minute.

Around this machine are built systems which will vary with the size of the user banks, ranging from large banks — those with upwards of 100,000 checking accounts handling more than 200,000 checks daily—to small banks with a volume of 15,000 to 50,000 checking accounts and from 20,000 to 75,000 individual checks daily.

Less than a month after the ABA revealed it had decided on the final MICR type font, International Business Machines Corporation announced its Series 1200 Character Sensing Equipment to read that language and process checks on which it appears. The equipment is compatible with standard IBM data processing systems—from punched-card machines to the new 7070—to provide a full-range of services to banks of all sizes, the company reports.

Francis G. Rodgers, manager of bank marketing for IBM's Data Processing Division, said, "The advent of this type of equipment removes the last barrier to advance automation of demand deposit accounting."

For the "growing bank"

The Series 1200 equipment to which he referred include a proof-inscriber, at which an operator will enter dollar amount and control information in magnetic ink during the proof operation. A utility inscriber, resembling a modified IBM electric typewriter, will be used to inscribe any necessary substitute documents with magnetic ink.

A transistorized sorter-reader puts the checks or deposit slips into desired sequence at the rate of up to 900 cards a minute. It also reads the MICR data to enter it into the standard IBM data processing system being used by the bank. Each system will be interconnected with the sorter-reader by a transistorized control unit.

IBM also categorizes its systems for banks of varying sizes. For "the growing bank with modern needs" it proposes Character Sensing linked with a unit record system based on a punched-card Accounting Machine.

For "larger banks" needing electronic speeds, the Series 1200 equipment would feed data into a Type 650 Data Processing Systems. "The Most Advanced Approach" relates the new MICR equipment to an IBM 705, 7070 or 650 Tape system which would include high-speed printers writing statements and journals at up to 1,000 lines a minute.

National Cash Register Company presents its entry into the MICR field as part of its "automation timetable"—a step-by-step program leading to full automation of a bank's operations department. The concept is based on the belief, NCR says, that the transition to full automation best can be accomplished in progressive steps.

A joint venture

The first step, already well established, has been marketing of the POST-TRONIC, a machine for electronic posting of checking account records. This now is supplemented by development of four machines compatible with the ABA's MICR standards.

One is the Magnetic Amount Printer, with which amounts will be entered in magnetic ink on various media as the items are being proved. The Pitney-Bowes National Magnetic Character Sorter will read and sort the magnetically-imprinted documents. This machine was developed jointly by Pitney-Bowes, NCR and General Electric (which supplied the reading head.) It will operate at the rate of 750

"I can sure feel the impact of this new boom in business automation."

items a minute. Later in the NCR "automation timetable," the company reports, which will be connected to the sorter include an electronic controller, a high-speed lister, a low-speed lister and a punched paper tape recorder.

Here are more!

NCR's Magnetic Qualification Printer will pre-print account or transaction number (or both) on checks and deposit slips at the time an account is opened. The fourth unit is an Automatic Ledger Feeder, which may be attached to the POST-TRONIC machines now in use. This will automate trial balances, balance transfers by passing statement-ledger forms into the electronic posting machine and receiving them after the posting is accomplished. Later the feeder also will be used for daily posting with a new fully-automated POST-TRONIC which will be activated by a punched paper tape.

The Burroughs Corp. pools its corporate resources in presenting its bank automation program. It breaks down the processes involved into Media Preparation (specialized in by the Todd Division), Media Handling (the Burroughs Division's interest) and Media Processing (handled by both ElectroData and Burroughs Divisions).

The Burroughs Sensitronic Bank Bookkeeping Machine, with which the company already has made an entry into electronic bank procedures, is one of seven MICR-compatible units offered. These, Burroughs says, will be used in varying combinations depending on the degree of automation required. The lineup of automation equipment includes: The Todd Magni-Chek Imprinter, which pre-prints deposit accounting media in common-language magnetic ink. The Sensimatic Proof and Distribution Machine, which has a facility for by-product amount post-½ printing to permit MICR processing. The Burroughs Magni-Chek Amount Printer, designed specifically to print in magnetic ink and to provide input for proving.

Do-it-yourself printing

Burroughs' key electronic check-handling machine is the Magni-Chek Document Sorter. This is the unit whose prototype was based on reading of fluorescent codes. Modified to MICR, it will furnish read-sort input for fully automated systems. In addition to the Sensitronic Bank Bookkeeping Machine, the company also has an Auto Reader to be used in combination with one or more Sensitronics. The Reader automatically feeds and processes coded amounts for trial balances and balance transfers.

The fully automated system would involve a Burroughs 220 Computer. Previously processed coded data would be fed into this system with automatically prepared punched paper tape.

The Remington Rand Division of Sperry Rand also has worked closely in cooperation with the ABA and other manufacturers in the development of MICR techniques. But the company reports it is not able to release information about equipment which is not a production reality and no machine information is available at the moment.

Producers of offset printing machines makes up another group of manufacturers vitally interested in magnetic ink bank procedures. Addressograph-Multigraph, A. B. Dick and Davidson all have announced magnetic ink printing units. Much of this equipment also will be automated.

One offset machine being marketed by A. B. Dick to both banks and check imprinters can be programmed to automatically count number of checks per book, number of books per order, image development revolutions, blanket cleaning revolutions and seconds of time delay between check books. The machine operation is completely automatic, requiring only a change of the offset master and a touch of the start switch.

A big job ahead

Addressograph-Multigraph has introduced a new Multilith Offset Duplicator, Model 1278, which will, in one run, number checks serially; imprint depositor's name, address and account number; and encode in magnetic ink. The firm has also brought out a new type font for the Vari-Typer which can be used for inexpensive check composition.

Since some bankers have expressed the opinion that an increase in on-premises imprinting of magnetic data on checks will help hold down their automation costs, there very likely will be a growing market for this type of equipment. And it may develop even more quickly than the market for the check processing equipment itself.

L. G. Trowbridge, an applications development specialist at A. B. Dick, said, "To make a magnetic ink character recognition system work right a year from now, a bank will have to start imprinting its checks immediately. That way it will have 85 or 90 per cent of its checks encoded when the equipment goes into operation. Throughout the country it will be a big job. Roughly 40 per cent of the checks in circulation are personalized now. The banks are going to have to shoot for 100 per cent to make automation most effective."

The continuous form check companies also

have their eyes on the problems of magnetic ink imprinting. R. L. Fortune of Standard Register, who is chairman of the Type Design Committee which assisted in MICR development, pointed out that his firm has been working on magnetic ink printing techniques for a number of years.

"We also have been printing magnetically-coded checks for a few years for the Bank of America," he said. "Actually, aside from the precision involved in location of the common language information, there will not be much change in continuous form checks."

Accuracy assured

Accuracy is the big need in MICR printing, the forms companies agree. Douglas Hoffmann, sales promotion manager of Uarco, Inc., pointed out: "We were printing experimentally with the new configuration two years ago, working closely with the ABA team. We've produced checks for California banks at our Oakland plant.

"The thing we all have been striving for in the forms industry is development of accuracy and registration in relation to the edge of the check. We're also working on ink intensity with the new special magnetic ink formulas. The extreme accuracy necessary in location and coverage already is within the capabilities of the precision continuous forms houses such as ours."

A murmur of dissent

Al Sargeant of the Moore Business Forms research group said his firm also participated in ABA committee work during MICR development. He noted, "A primary concern is printability of the new character that has been developed. We've done a large amount of experimental work and some production printing with it. Every effort has been made to develop a system attainable to printers in general."

With the manufacturers, the ABA, the printers and apparently, the large banks ready to move into full-scale MICR automation, the questions recurrs: What about the small banks? And how small is small?

As an official of relatively small ($11 million) Citizens National Bank at Wellsville, N.Y., Denton A. Fuller has given considerable thought to the matter: "I think full automation is in the cards for the smaller banks only over a long period of time. Automation must be a gradual process, perhaps starting with an electronic bookkeeping machine.

"Banks should get down to business, learn their own requirements and make their decisions on the basis of their own needs, not on the pitch of a salesman," Fuller recommends. "This is important, because I think in the case of a bank like ours and smaller banks it will be quite a few years before we are involved in character sensing on checks."

Winston-Salem's Shipley, a member of both ABA and NABAC automation committees agrees that smaller banks may not get into full automation immediately. But he sees several alternatives.

"At the outset," Shipley said, "the cost of this equipment will price the smaller banks out of the field. In the meanwhile, however, some may get into automation partway, to take advantage of the sorting advantages alone. In addition, three or four banks conceivable to band together to operate as a service bureau. Or larger banks may do the automation operations for them. For example, 75 per cent of the banks in North and South Carolina have accounts with us. On a fee basis, it is possible we could operate an automation installation to do their bookkeeping for them."

Eliminating the prejudice

Discussing this type of possibility at a past NABAC Automation Symposium, Vice President Steel of Cleveland's Central National admonished bankers: "What must we do to make such an approach possible? First is the necessity for eliminating the prejudice against having accounting work done outside the premises of each individual bank. I know that many banks would be very reluctant to think in terms of the checking account ledgers in magnetic form on a whirling drum 100 miles away.

"How do we overcome this attitude?" He advised his audience: "We all know that lack of

"There's been a last minute change in the judging."

familiarity breeds suspicion and fear. This fear can be overcome if we become familiar with the nature of electronic data processing, if we understand its limitations, and if we reach a full realization of the manner in which electronic controls can be utilized to assure that the confidential records of one bank can be made completely inaccessible to others."

The same general principle that is used in MICR—machine-reading of Arabic characters—is being applied to banking and business applications by an Alexandria, Va., firm known as Intelligent Machine Research Corporation.

The difference lies in the fact that the IMR reader—called The Eye—does not require the use of magnetic ink. It "reads" conventional printers ink with an optical scanning technique.

IMR has been creating document-reading machines since 1951 and reports it has several installations performing character operating on a daily production basis to create input for data processing systems using the punched paper tape. Transfer of data to magnetic tape for computer systems is under development and will be in operation this year, it reports.

The time of decision

Milton Grossman, IMR vice-president, said his firm's equipment primarily is in business applications, including utility bill-stub reading. "We do have three machines at the First National City Bank in New York," he added. "They are being used to read Travellers checks. In all, we have 22 machines in the field, some with as much as three years of operational experience."

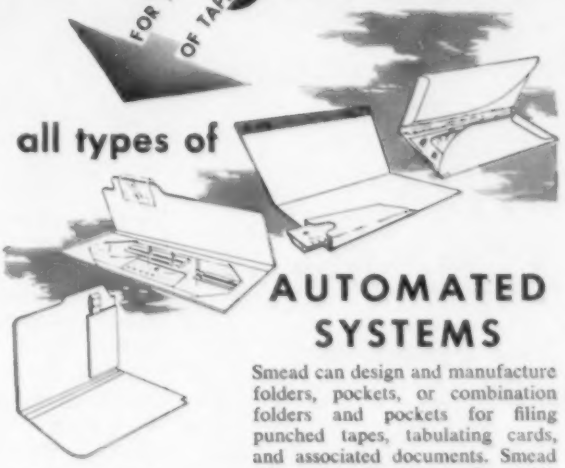
The practical application of IMR equipment in business is one of the best indications of the potential of Arabic character scanning techniques—optical or magnetic—has for industry in general. Success of MICR automation in the banking field undoubtedly will create even wider interest in this technique in business circles in the future.

Businessmen, who are just as plagued with paper volume as bankers, are watching the new developments with more than a passing interest. They are aware that MICR may be the electronic messiah that will finally free them from the mounting burden of paper work.

For bankers, however, the time of decision already is at hand. They received a warning of this recently from NABAC Research Committee Chairman Rohlf: "It is becoming obvious that the equipment companies have zeroed in on the target and it will not be long before it will be necessary to make important decisions relative to the selection of equipment and systems." ■

Consult Smead

FOR THE FILING AND FINDING OF TAPES AND CARDS USED IN . . .



all types of

AUTOMATED SYSTEMS

Smead can design and manufacture folders, pockets, or combination folders and pockets for filing punched tapes, tabulating cards, and associated documents. Smead offers the advantages of a wide range of facilities in paper converting and can incorporate acetates or vinyls to resist "bleeding" of oil from tape.

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and
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reports the automated systems used by the U.S. Internal Revenue Service to process your income tax return and 60 million others annually,

and . . .

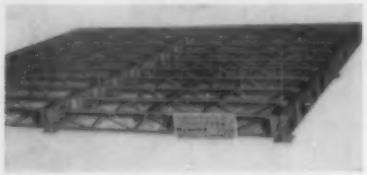
read how a "Keysort" system can be employed as a major cost cutting weapon by a small business.

Be sure to read these and other dynamic features in the April issue.
Make MANAGEMENT AND BUSINESS AUTOMATION a regular monthly reading habit.

MBA Showcase

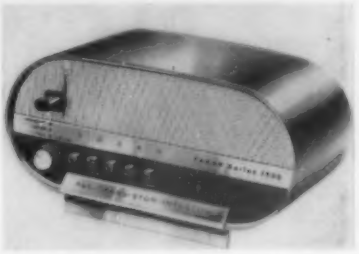
New Products for Business Automation

Computer Platform Frame



V-LOK interlocking steel framing for computer platforms consists of short columns approximately one foot high. Each column has interlocking attachments with side-entry slots which facilitate the ready assembly of a platform of any desired size. When the frame is closed in on top and sides, it forms a plenum chamber with vents through the floor panels for electrical connections and air conditioning. The floor panels are usually 1⅛-inch plywood covered with tile or linoleum for easy cleaning and appearance. The platforms are designed for a total load of 100 lbs. per square foot, or a 2,500 lb. concentrated load on any Purlin, or a 3,100 lb. load on any girder. By Macomber, Inc. Circle No. 3-1.

Transistor Intercom



All-transistor intercom units, powered by battery or AC current, is the newest offering of the Fanon Electric Co., Inc. One of the advantages claimed for the low-power transistors is that they provide instant conversation with no time required for warm-up. The units are all fashion-styled and available in five colors. In the line at present is the "1500 Series", a six-station master with pushbutton selectors or a 12-station master. A selective remote model is also offered and the equipment can be used in all-master, master-to-remote or intermixed systems. Each unit has four germanium transistors and permanent magnet speakers. Circle No. 3-2.

Vertical Collator

Newest J.C. Mendes Corp. four-station collator is capable of picking up and collating 16,000 sheets per hour in sizes up to 11 by 17 inches. Vertical design requires only 30 by 40-inch floor space. Unit shuts off if sheet is missed or double pickup made. Circle No. 3-3.

Data Punch System

Two simultaneous records—a detail strip (receipt) for immediate accounting data and a punched tape—are produced by this new Data Punch introduced by Victor Adding Machine Co. Information on the tape can be converted to punched cards or magnetic tape for further processing, and with flexible coding, the data punch makes it possible to identify totals, sub-totals, account numbers, merchandise, codes, etc. The system includes a Victor Custom Line full-keyboard adding machine and a tape punch which operates at a rate of 20 digets per second on power supplied by the adder. The cost is said to be within reach of smaller businesses or branch operations of large businesses. Keyboard input may be electric or manual. Circle No. 3-4.

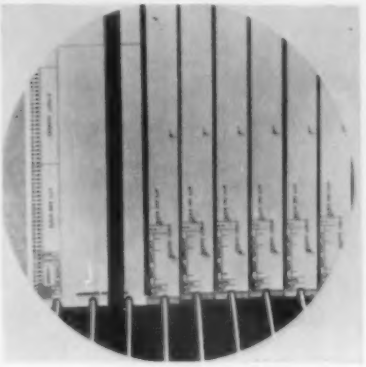
Record Storage

The Tandem storage files by Bankers Box Co. were developed to meet the need of low cost record files that use all the space involved. Each unit has two 15 by 10 by 12-inch corrugated fibre-board trays that fit into the stacking unit in tandem. The units build their own steel framework as they are stacked to any ceiling height. Each interlocking unit holds 30 inches of leter-size or 24 inches of legal-size material and can be converted (by partitions) to hold cards, checks or other records. Company claims a saving of 10% in floor space because no waste is involved. Circle No. 3-5

Microfilm Storage

New microfilm storage cabinets, designed to give maximum filing capacity in minimum floor space, have been announced by the Watson Mfg. Co., Jamestown, N.Y. A complete unit will hold 1,934 rolls of 16 mm. film, or 1,192 rolls of 35 mm. film. The upper and lower units are available separately. Circle No. 3-6.

Punch Card File



Any one of 16,500 punched cards is said to be available within three seconds if housed in this new filing unit designed by VISIrecord, Inc. The system utilizes specially notched cards (manufactured by IBM) which straddle special spacer rods and rest on ribbed corduroy linings. The end notching is said not to interfere with the end columns on the card, and the system keeps the card from being damaged because of slipping, jamming or binding. The cards are offset horizontally so that a ¾-inch margin, on which number or name is printed, is instantly visible for scanning and selection. The operator simply flicks open the proper bank and extracts the proper card with no other

card touched. The housing unit, shown here, holds 8,000 notched cards on the left side. The unit on the right is called "VIStem" and holds up to 15,000 cards in packs or decks. In this unit the packs are constantly supported to provide a 40-degree filing "V", eliminating follower blocks, spring mechanism, or other devices. Single housing units may be equipped for filing either 16,500 individual notched cards or packs and decks up to 30,000. Circle No. 3-7.

TANGLED IN A PUNCHED TAPE TIEUP?

The miles of paper tape used in today's Data Processing Systems are proving that *yesterday's filing systems can't solve today's problems! VISI*record's research and engineering, recognizing that new problems call for new answers, have provided a whole range of "modern as tomorrow" solutions to the problem of tape filing foulups. No matter if the tapes you work with are long or short, are used only internally or transmitted, are used in predictable sequence or at random, whether they must travel to other processing locations or are used in a single department – whether your problem is constant or ever-changing, *VISI*record *has the answer you need.* Whether your system uses tapes only, or involves punched cards as well, either tabulating or common language type, *VISI*record provides specially designed techniques incorporating these vital economies:

- Maximum use of valuable machine time
- Speed of location and refiling
- Visual control and identification
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- Operator convenience and satisfaction
- Complete system flexibility

Write now (or clip and attach this ad to your *signed* letterhead) for "Automation's Missing Link", *VISI*record's answer to your I.D.P. filing frustrations. Address Dept. BA-2

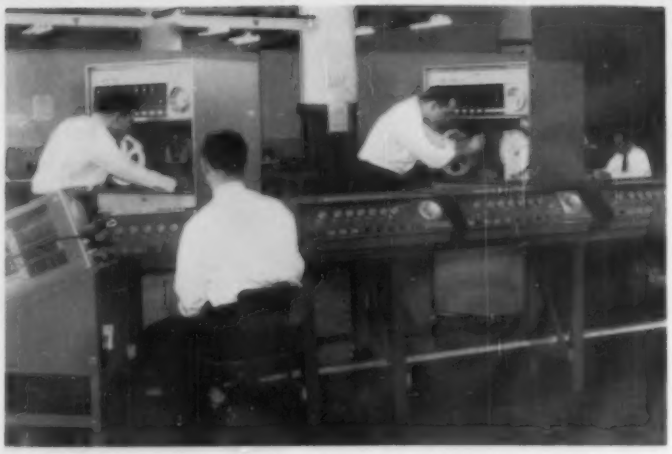
VISIrecord, Inc.

375 Park Avenue, New York 22, N.Y.

The world's fastest visible record keeping system

Circle Reader Service Card No. 3-61

Transacters Speed Data To Central Processing



First installation of the new Stromberg Time Corp. Transacter System is in the Naval Gun factory in Washington, D.C. where it feeds data to an IBM 650 computer.

An MBA Product Preview

AS an integral part of the pre-input stage of any data processing program, the new Transacter System devised by Stromberg Time Corp. makes it possible to collect information at remote sources and feed it instantaneously to a central processing office.

The first production unit has been installed at the United States Naval Gun factory in Washington, D.C., where it will be used to feed data information to an IBM 650 computer. Its primary function is to simplify manufacturing control.

As envisioned for industry use, the electronic system (its name is derived from the words "transaction transmitter") should eliminate the need for paper work and clerical operations between the source of a transaction and the central processing office.

In a given installation, transacters are located at any required number of remote "transaction stations." Each individual unit accepts punched cards or tags containing certain pre-recorded information. In addition, the transacter identifies its operator and location, together with the specific item or machine operation covered by its report.

All pertinent variable data is dial-set by the operator, and rounding out each transmission is a transaction code designated by a selector on the panel of the instrument.

This information is transmitted instantaneously to a compiler located in the central processing office. Within the compiler, shift, date and time information, end of message code and instructions to subsequent processing equipment are added to each message received from each transacter on the system.

The output tape on which the compiler records its information is suitable for immediate use and can be fed directly into communications systems,

Data is fed directly to the transacter at the remote source as the young lady pictured here is doing, and it is sent to the central compiler (seen at rear) where it is recorded on punched tape for storage or transmission.

automatic typewriters, tape-to-card converters, or electronic data-processing equipment. Self-checking mechanisms throughout the system verify the accuracy of output messages.

Stromberg expects to see the system find broad application in all mass production industries—particularly aviation and automotive industries and the home appliance industries. The initial industrial installation is slated for the General Electric Home Laundry division. Here it will be coupled with the Remington Rand Univac I and applied to the recording and transmission of a wide variety of manufacturing data.

Continuous Forms

A new process that makes possible the pasting of two to six part continuous forms and still guarantee trouble-free performance, has been announced by the Baltimore Business Forms Company. The new system eliminates the bulk at the folds common to most glued forms which affects registration and hampers the flow through high speed business machines. The forms use less expensive non-processed carbon and are said to assure jam proof, slip proof performance. Circle No. 3-9.

Document Protection

A new type of plastic film provides an inexpensive method for permanently sealing drawings and papers before releasing them for blue prints or photostatic copies. Introduced by the Print-A-Tube Co., the highly transparent film permits grease pencil or crayon markings without marring the paper underneath. Circle No. 3-10.

Photocopy Machine

Another entry into the low priced office photocopy machine field is this Genco Challenger, by General Photo Products Co., Inc., a complete photocopier for $85. The machine is self-contained and has a maximum copy surface of 9½ by 15 inches. Features include the "syncro-meshed" processor which is said to give the operator a trouble-free performance. The curved surface printer has a positive contact, spring tension, canvas cover. The unit weight only 14 lbs. and is completely portable. Circle No. 3-11.

Microfilm Camera

The "Copiflash" portable 35 mm. microfilming camera is designed for on-the-spot filming of documents, maps, diagrams or business records up to 9½ by 15 inches in size. The camera is pre-set and pre-focused, operating with its own battery-powered strobe light source which encircles the lens. When not in use, the 5-lb. unit is housed in a compact carrying case. A separate instrument, the Camcopy Reader, is available, or prints may be reproduced by ordinary photographic enlargement. Circle No. 3-12.

ONE DAY SERVICE
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TABULATING
CARDS

Write . . . wire . . . or phone for fast delivery of stock cards. Our inventory is maintained to assure shipment same day order is received. EAC guaranteed quality and service eliminates down time in your data processing operation. *For fast service phone High Point 2-8117.*

NEW CARD FORMS

Extremely rush orders on new card forms can be filled in seven days. Normal new card form delivery (when proof is supplied) is 2 to 3 weeks. Use EAC's warehousing facilities . . . periodic guaranteed shipments made when needed, so you save valuable space.

Write for FREE booklet telling the complete story of EAC's production of precision accounting cards.

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EAC ELECTRONIC ACCOUNTING CARD CORP.

ELECTRONIC ACCOUNTING CARD CORP. • P. O. BOX 1088 HIGH POINT, N.C.

Please send me complete price list and samples of EAC precision tabulating cards.

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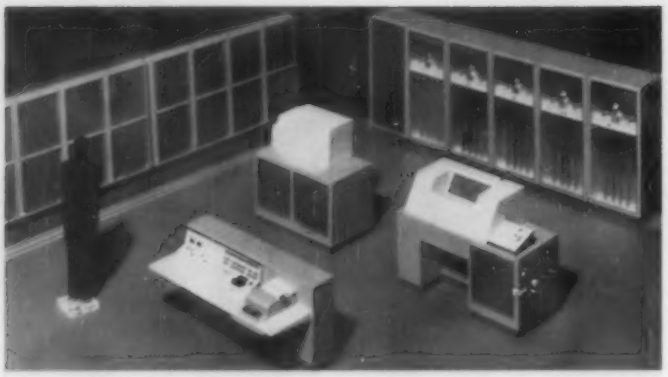
Company_____

Address_____

City_____ State_____

For More Information Circle Reader Service Card No. 3-62



Medium-scale Computer Handles Up to Eight Jobs Simultaneously

The Honeywell 800, a new all-transistorized medium-scale computer, features a technique called "Automatic Parallel Processing." This allows the computer to perform up to eight independent jobs simultaneously.

The two electronic innovations which make the unique technique possible are "Traffic Control" and "Multi-Program Control." Traffic control allows the central processor to communicate simultaneously with as many as sixteen input or output devices, eliminating bottlenecks caused by the comparatively slow speeds of supporting equipment.

Multi-program control is the refinement which provides a new ability to use the system's computer power fully and at all times.

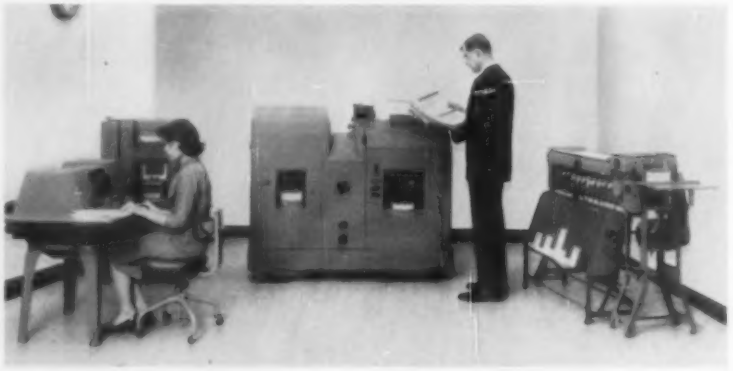
The 800 divides its central processor up into several parts automatically and requires no special programming. Parallel jobs, both scientific and business, can be separately started and stopped with the same independence as if they were performed on separate computers.

The system will occupy about one-tenth the floor space required by a comparable nontransistorized system and will use about one-tenth the power.

The faster speeds of the Honeywell 800 are claimed to establish new highs in the medium-scale data-processing field. Maximum input and output has been boosted to 96,000 decimal digits per second on each magnetic tape.

Orthotronic Correction, Honeywell's exclusive data-protection principle which makes it possible to reconstruct lost, damaged or garbled data instantly and automatically, is standard equipment. Circle No. 3-13.

A Punched-Card System for Small Business

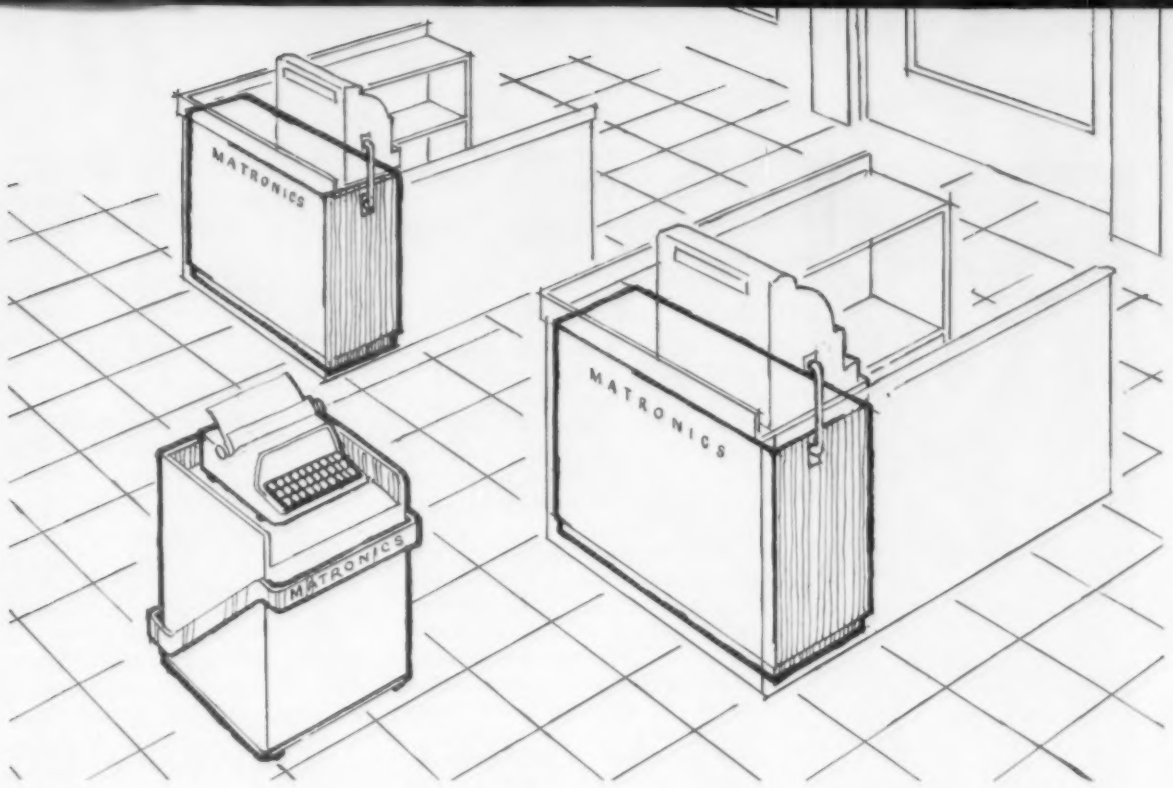


The Remington Rand Univac division of Sperry Rand Corp. has unveiled what it terms a low-cost system of punched-card data processing designed for small business.

The new system is said to make it possible for smaller firms, branches, or plants of larger firms to machine process such accounting work as production control, payroll, inventory control, accounts receivable, and sales analysis.

Four basic pieces comprise the initial system —the alphabetical punch, sorter, alphabetical tabulator and summary punch, and the reproducing punch. The units will process at a speed of 60 cards per minute, and they can be adjusted to perform faster. There are additional units which can be added as required.

In the estimation of Howard V. Widdoes, vice president of sales for Univac-Systems, the system affords small business an opportunity to make use of equipment formerly available only to larger organizations—at a cost which he terms "below comparable manual systems. Circle No. 3-14.



An MBA Product Preview

Point-of-Sale Computer Relieves Cash Register Bottleneck

A new point-of-sale computer, the Mastor, has been developed by Matronics, Inc. of New York. The computer operates as an integral part of any cash register, according to Robert Meisel, company president and designer of the equipment.

The Mastor is designed to relieve a serious bottleneck in many retail operations. With present systems most cash registers are equipped to accumulate sales statistics for only about 17 items. This means that checkout points must be departmentalized.

An alternative is to equip registers with a punched tape output for recording sales information. However, this system requires a conversion of tape before a complete analysis can be made. Also, it usually requires a further investment in data processing equipment.

Under the Mastor system, each check-out register can be equipped with a unit capable of handling a sales record of the store's entire line of merchandise. As a sale is recorded at the check-out point, the clerk follows the normal procedure of entering department or classification number on the register. The attached Mastor unit automatically posts each transaction in its memory.

At the close of the day's business, a mobile readout computer—part of the Mastor system—is rolled up to each unit. A simple plug-in operation transfers all information to the readout computer. The mobile equipment can service any number of register units. Information collected requires no further processing and is printed out as typewritten copy.

The readout computer can be designed to give not only daily information but also cumulative sales. It is about the size of a standard electric typewriter and stand.

The register units are constructed with various capacities and will handle anywhere from 50 to 500 classifications of sales. More than one cash register can be attached to a unit.

The readout computer is also available in different sizes, depending upon needed capabilities. The units are estimated to cost from $2,100 to $4,000. The computer will range from $2,500 to $7,800.

FOR A CHECKUP

A year ago, he was only reading about cancer, just as you are now. But cancer was something that happened to the other fellow. No need for *him* to go to a doctor.

Now that he knows better, it is unfortunately too late. He is one of the 75,000 cancer patients who will die needlessly this year because they did not see their doctors in time.

...AND A CHECK

Nor could he see any reason, last year, for backing the fight against cancer with his dollars.

But cancer always strikes close to home—in two of every three families, to be exact. This toll can be reduced by supporting the medical counterattack with a contribution.

The other fellow? He's always one of us. Some find it out the hard way. What will it take to convince you?

Guard your family—
fight cancer with a
checkup and a check.

Send your check to "Cancer,"
c/o your local post office.

AMERICAN CANCER SOCIETY

More News

Continued from page 13

Converter Speeds Missile Data Analysis

A high speed data converter which translates data gathered in connection with a missile or rocket flight into a format suitable for use by several large scale electronic computers has been put into use at Patrick Air Force Base at Cape Canaveral, Fla.

The converter, designed and constructed by Telemeter Magnetics, Inc., has the ability to translate data at the rate of more than 50,000 computer words per minute. This is in comparison, the company states, with the paper tape to punch card system where conversion occurs at a rate of less than 800 words per minute. The conversion is into magnetic tape and paper tape for use in such computers as Univac 1103A and 1105, IBM 650 and 704, and Burroughs Datatron 205.

Because missile and rocket data must be analyzed after each firing before a subsequent test is initiated, the converter, has cut time consumed in processing between shots to a matter of hours.

Important to industry as a whole is the fact that the converter demonstrates the establishment of compatibility among computers of different design.

Recent Appointments

Recordak Corp.—Van B. Phillips, former general sales manager, has been promoted to vice president of sales and advertising.

Smith-Corona Marchant, Inc.—Edson G. Moshier is the new vice president of engineering and Edwin J. Graf is director of manufacturing.

Montgomery Ward & Co.—Ernest L. Miller has been named data processing manager of this company. He was formerly vice president of tabulating operations with Workman Service, Inc., in Chicago.

Victor Adding Machine Co.—Alvin F. Bakewell, vice president and general sales manager, was recently elected to the company's board of directors. He has served the company for 31 years. At the present time he is president of Victor's Canadian subsidiary and Export Co.

Royal McBee Corp.—Edward Belsho is the new manager of public relations for the firm. He was previously in corporate public relations department.

Cummins-Chicago Corp.—Carl P. Arberg, Jr., has been named manager of the Newark sales and service branch in New Jersey.

Comptometer Corp.—Two sales representatives have been advanced to district manager posts. Will DeWitt is now manager of the Springfield, Mass., office and Robert Davison is district manager of the Syracuse, N.Y., branch.

Stromberg-Carlson Division, General Dynamics—Eugene T. Mueller has been promoted to the position of manager of communications and Sonar sales in the Electronics division. He was previously staff assistant to the director of marketing.

National Cash Register Co.—Two new members of the board of this company are David L. Rike, president of Rike-Kumler Co. of Dayton, Ohio, and Joseph A. Grazier, president of American Radiator and Standard Sanitary Corp. of New York.

Control Data Corp.—Gene B. Heywood, partner in the firm of Dean Witter & Co., Chicago, has been named a member of the board of Control Data.

Burroughs Corp.—Robert J. Chartrand is the new New York field engineering manager for the ElectroData division. He was previously a senior field project engineer.

Columbia Carbon Co.—Hans Stauffer, president of Stauffer Chemical Co., has been made a member of the board of Columbia.

Lyon Metal Products, Inc.—Richard L. Seidelmann, formerly operating head of the auditing and tabulating department, is now auditor of the firm. He retains supervision of the two departments.

The Wright Line, Inc.—announces that its controller, Ralph W. Kindley, has been elected to membership in the Controllers Institute of America.

MBA'S
Calendar
Of Meetings

March 5-7 — Southern Conference Controllers Institute of America, Hotel Roosevelt, New Orleans, La.

March 23-26 — Office Management Association of Chicago Business Show, Conrad Hilton Hotel, Chicago. Contact William C. Dieden, chairman of the show, Chicago Federal Savings and Loan Association, 100 N. State St., Chicago.

April 13-15 — Life Office Management Automation Forum, Chicago, Ill., Drake Hotel. Contact LOMA at 110 E. 42nd St., New York 17, N.Y.

April 19-21 — Eastern Conference Controllers Institute of America, John Marshall Hotel, Richmond, Va.

April 21-24—12th Annual Southern California Business Show, Ambassador Hotel Convention Center, Los Angeles. Contact Publicity Chairman Edward P. Barrington, National Association of Accountants, 731 S. Spring St., Los Angeles.

May 25-27 — 40th International Conference of the National Office Management Association, New Orleans, La. Contact W. H. Latham, NOMA, Willow Grove, Pa.

June 15-20—First International Conference on Information Processing, Paris, France. Contact for U. S. committee, I. L. Auerbach, Auerbach Electronics Corp., 109 N. Essex, Narbeth, Pa.

June 21-24—International Accounting Conference, Waldorf-Astoria, New York City. Contact N.A.A., 505 Park Ave., New York 22, N.Y.

June 24-26—National Machine Accounts Association, St. Louis, Mo., Chase Park Plaza. Contact N.M.A.A., Paris, Ill.

October 28-29—Sixth annual Computer Applications Symposium sponsored by Armour Research Foundation of Illinois Institute of Technology at the Morrison Hotel, Chicago. Contact M. J. Jans, conference secretary, Armour Research Foundation, 10 W. 35th St., Chicago 16, Ill.

November 16-20—Fifth International Automation Congress and Exposition, New York Trade Show Building, New York City. Contact Richard Rimbach, managing director, 845 Ridge Ave., Pittsburgh 12, Pa.

Classified Advertising

Position Wanted

PROGRAMMER—ANALYST

Experienced IBM 650-RAMAC. Accounting-Industrial Engineering Background. Seeks future in Applications and Programming with East Coast Industrial Firm contemplating EDP. Resume. MANAGEMENT AND BUSINESS AUTOMATION, Dept. No. G-1, 100 East 42nd Street, New York 17, N.Y.

Rates for classified advertising are 75 cents a word with a minimum of $10.00 per insertion. Payment should accompany order. Allow 6 words if blind box number is used. Deadline: 10th of month preceding date of issue.

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Davidson Corporation **5**
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A. B. Dick Company **12, 13**
Agency—Fuller, Smith and Ross, Inc., Chicago

Electronic Accounting Card Corporation . **45**
Agency—James R. Fox, Advertising, High Point, N.C.

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EDITORIAL

Islands of Automation

With the exception of special purpose applications, the true potential of a computer is realized only when the system transcends all departmental barriers. The data seeking tentacles of the system must reach out into every area of company operations. There are no "off limits" if a computer system is to be successful.

To place a computer program under a man already confined to narrow boundaries by a company organization chart is to create, as Clinton Robinson, Carborundum's President puts, it, "an island of automation."

These "islands" have been created in the past with punched card installations and systems departments: created by men (usually controllers) unwilling, or unable, to extend their sphere of influence beyond the walls of the accounting department. Subjecting a computer system to a leadership with these limitations is sheer folly.

A computer requires top management control and company-wide acceptance. The man responsible for the program must command the attention and respect of his entire organization. Traditionally the controller has been the steward of data processing systems. But we agree with D. R. Daniel (who, in his article on "Picking the Computer's Boss" (page 21) challenges the wisdom of selecting the man to head up your automation program without first analyzing his "corporate strength." We feel the record sustains his argument.

A Shirt Tale

It's a far cry from data processing to the family wash but the computer knows no bounds. Now we have a Laundromat with an "8 program computer." We aren't aware yet of the techniques involved or whether the programming varies depending on the use of "Rinso Blue," "Fab," "Tide," or "Borax." Of one thing you can be sure: this is one application where someone might lose his shirt.

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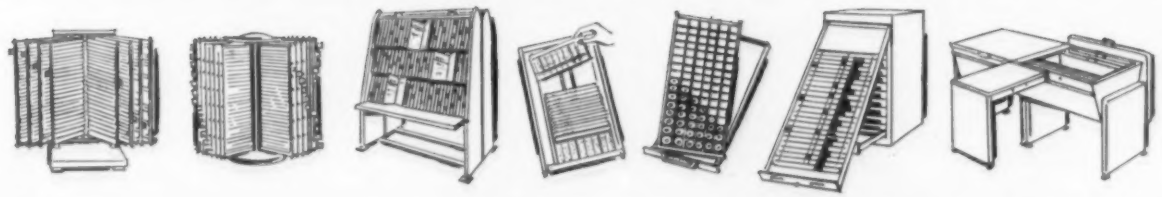

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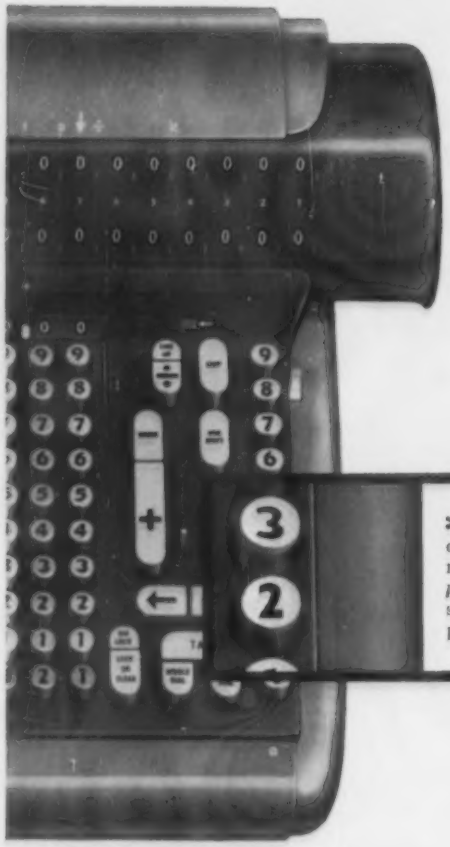

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